October 7, 1957

Paper Trade Journal

How Mead Eliminated Snow at Kingsport Pulp Mill

What the Fourdrinier Shake Does at Slow Speeds

Did a Fast Rebuild Job after nd Mill Fire

Crystal's New Specialty Tissue Machine is Versatile

Engineers Meet in Twelfth Conference at Cincinnati

Detailed Production Picture of First Half Year

University Microfilms
Att: E B Power
313 N First St.
Ann Arbor, Mich.

At Your Service—in Pulp. Whether you make long-term arrangements or buy a single carload, you know your pulp shipments will be made on schedule, with meticulous attention to all details, when you deal with the Gottesman Organization. It's an assurance of service backed by over 70 years in pulp—the kind of service you'll value because you can count on it, every time.

THE GOTTESMAN ORGANIZATION

Established 1886

WOOD PULP G

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Central National Commercial Company, Inc.
100 Park Avenue, New York 17, N. Y.

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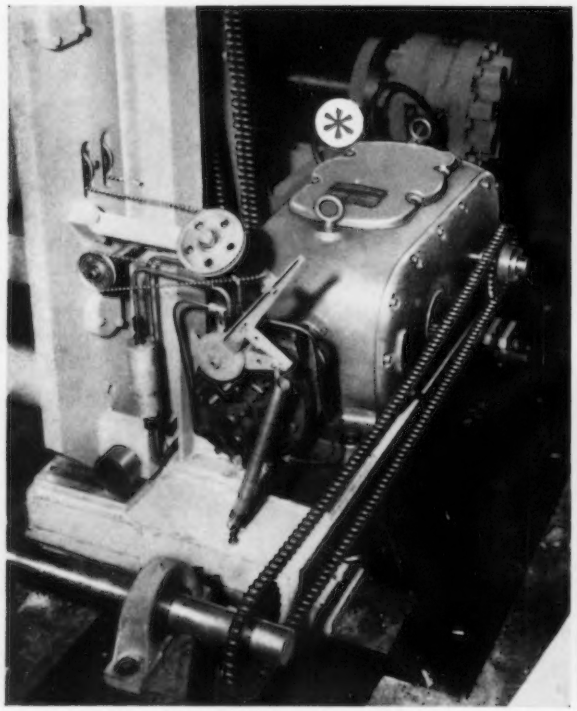
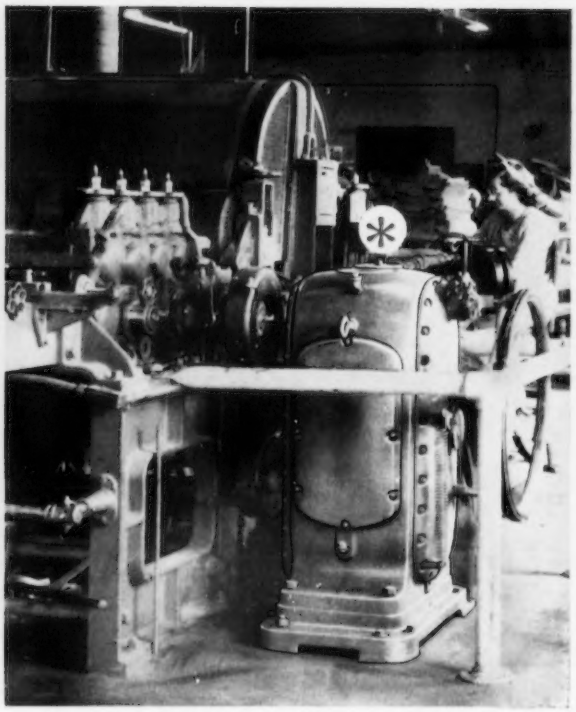
PULP PAPER EXPORT CNC

Representatives in 55 Leading World Markets



Accuracy of ±0.1% at speeds up to 2500 fpm is maintained by P.I.V. drive on cigarette paper machine. Need for precision is also shown by use of photo-electric cell to position rolls.



Remote-controlled P.I.V. drives on three bag tubers eliminated need for 75 gears to change speed for varying length of bags. Drive operation is steady, reliable.

Fine cigarette papers to coarse paper bags...

IT'S P.I.V. FOR ACCURACY

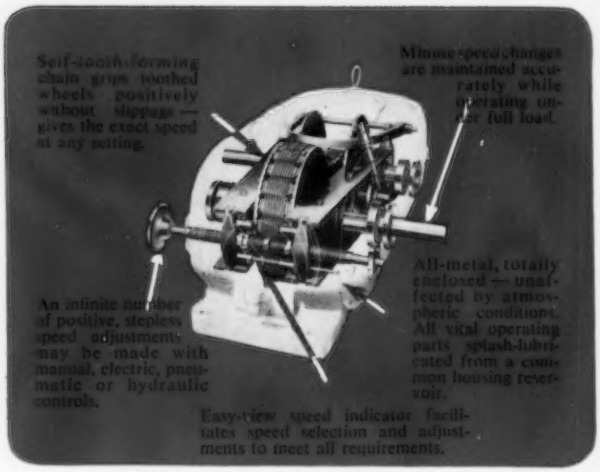
at any speed--under all loads

Provides positive, slipless transmission of power

HERE is industry's *one* variable speed drive that delivers precise, stepless speed control and positive, non-slip power transmission. These properties result from a unique chain drive, with self-forming metal teeth engaging radial grooves in two pairs of conical wheels.

Independent of friction, P.I.V. avoids wasteful slip and creep, ends speed hunting, extends the useful range of machine operations. Even while operating under full load, output shaft speed can be changed instantly, by turning the control hand wheel.

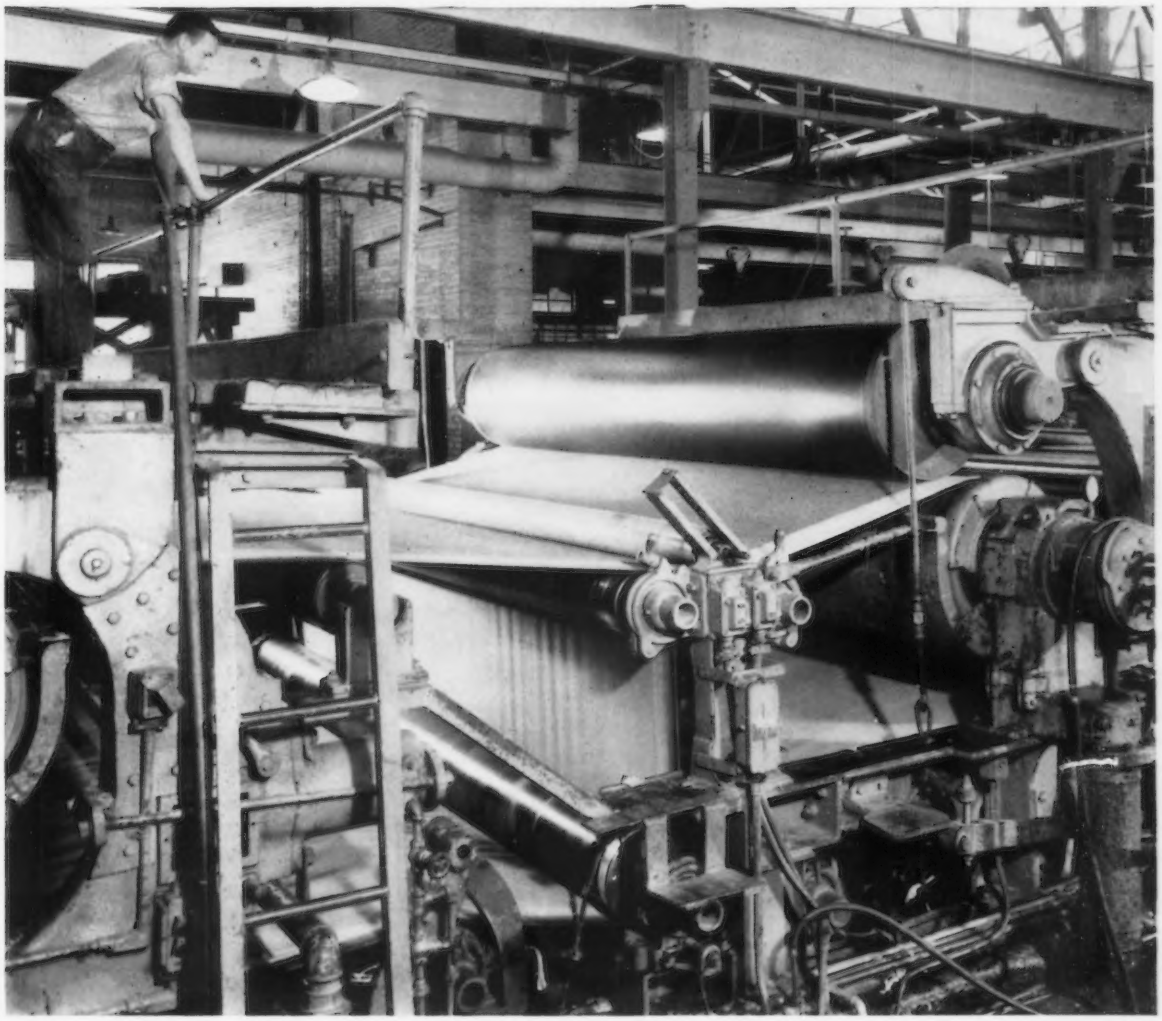
Get all the facts on Link-Belt P.I.V. drives—available in 8 sizes and 16 types, ½ to 25 hp. See your nearest Link-Belt office or authorized stock-carrying distributor. Or send today for Book 2274. 14.513


Self-tooth-forming chain grips toothed wheels positively without slippage — gives the exact speed at any setting.
Minute speed changes are maintained accurately while operating under full load.
An infinite number of positive, stepless speed adjustments may be made with manual, electric, pneumatic or hydraulic controls.
All-metal, totally enclosed — unaffected by atmospheric conditions. All vital operating parts splash-lubricated from a common housing reservoir.
Easy-view speed indicator facilitates speed selection and adjustments to meet all requirements.

LINK-BELT P.I.V. VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

B.F.Goodrich report:



Better paper formation, less shadow marking with this top press roll

YOU can get smoother, more uniform paper formation, and reduce shadow marking, by equipping your paper machines with B.F.Goodrich top press rolls. That's because the covers of these rolls are made of a special *soft* rubber compound, tough enough to stand years of use, yet soft so the roll presses perfectly without causing any crush marks to form in the tender stock.

This resilient rubber roll also gives better water removal at high speeds, and much longer felt life than was obtained with the bonehard type of roll previously used in top press service.

Another advantage of this *soft* rubber is that it does not pick fibers from the sheet. The B.F.Goodrich top press roll can be run directly on the sheet with practically every kind of paper stock except ground wood. On the machine shown above, a B.F.Goodrich roll has been in service seven years now, helping to turn out wrapping paper, bag paper, bleached and unbleached specialties.

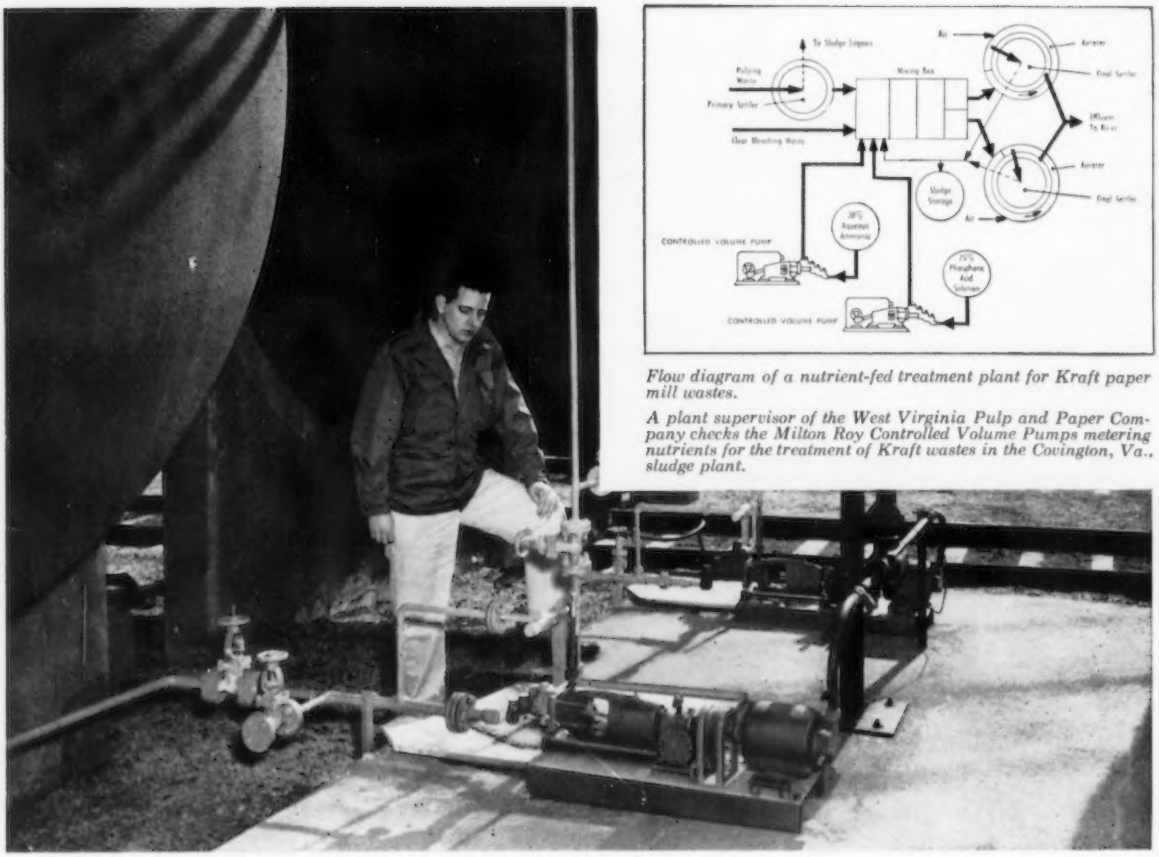
B.F.Goodrich makes top press rolls in a wide range of densities to fit the job—from 20 plastometer to as soft as you might want them. Let a B.F. Goodrich man show you how longer lasting, better performing B.F.Goodrich paper mill rolls can improve the quality of your paper and save you money. *B.F.Goodrich Industrial Products Company, Dept. M-195, Akron 18, Ohio.*

B.F.Goodrich

INDUSTRIAL PRODUCTS

Flow diagram of a nutrient-fed treatment plant for Kraft paper mill wastes.

A plant supervisor of the West Virginia Pulp and Paper Company checks the Milton Roy Controlled Volume Pumps metering nutrients for the treatment of Kraft wastes in the Covington, Va., sludge plant.



Pollution problems reduced... with help of nutrients fed by Controlled Volume Pumps

Pollution problems are being reduced by West Virginia Pulp and Paper Company at its Covington, Va., sludge plant . . . by successfully treating Kraft paper mill wastes economically. As part of the treating process, two Milton Roy Controlled Volume Pumps are feeding nutrients to sustain the biological life which converts the wastes to substances that are not harmful to fish or game.

One pump accurately controls and meters a solution of 30% aqueous ammonia at the required maximum rate of 30 gallons per hour . . . a second pump handles a 75% solution of phosphoric acid at the maximum required rate of 3 gallons per hour. Actual flow rates are manually adjusted as laboratory tests indicate changes in the nutrient demands of the sludge.

You too can profitably apply Controlled Volume Pumps in your water treating and paper making operations. Write for Bulletins 455 and 953. Milton Roy Company, *Manufacturing Engineers*, 1300 East Mermaid Lane, Philadelphia 18, Pa.

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Associate Editor

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REMEMBER THESE DATES

OCT. 7-8: Paper Plastics Conference at Sheraton-Gibson Hotel, Cincinnati, Ohio.

OCT. 17-18: Fibre Box Assn. Annual Meeting at Sheraton-Park Hotel, Washington, D. C.

OCT. 21-25: National Safety Congress at Conrad Hilton Hotel, Chicago, Ill.

OCT. 28-30: Packaging Institute 19th Annual Forum, Hotel Statler, New York, N. Y.

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For many years Pexol, Hercules fortified rosin size, has demonstrated outstanding effectiveness and economy in sizing highly bleached pulps of all types.

Pexol's superiority has been particularly apparent in sizing high brightness chlorine dioxide bleached kraft pulp. Today, most mills using this pulp insist upon Pexol for overall sizing efficiency and economy.

Pexol permits reductions in size furnish as high as 30 to 50% while maintaining sizing specifications. Available in both paste and dry forms, and in numerous types, Pexol can meet practically any mill requirement. A trained Hercules representative will be glad to work with you in selecting the best grade of Pexol for your needs.

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HERCULES

PP57-4

To All New Hands In The Punch Card Business

The old hands all use Kidder Slitters

Just entering the expanding punch card business?

Kidder offers you two accurate slitters of the highest quality you can get — one for high production slitting of card stock, the other for regular.

The heavy-duty, high-production, 2500 foot-per-minute slitter is a respected veteran in the punch card field. The regular-duty, lower-cost, 1500-2000 foot-per-minute slitter is a reliable, proven performer.

Both are accurate to plus or minus one one-thousandth of an inch (0.001″), holding your slitting to metal machining tolerances. Both use the shear-cut principle that results in completely severed webs, smooth edges, and *No Dust*.

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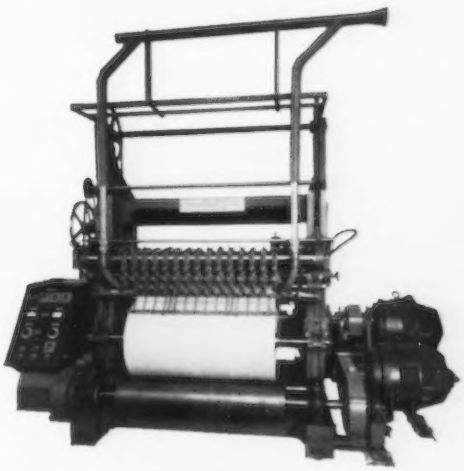

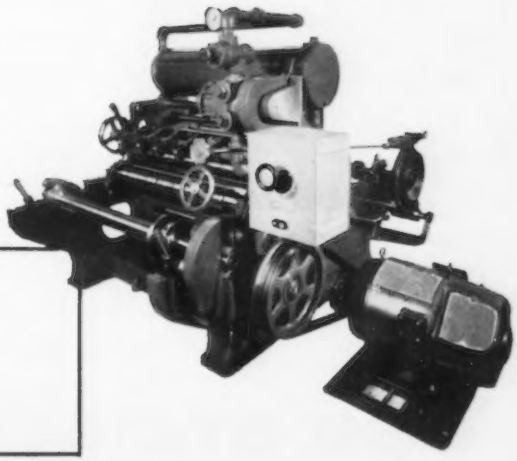

Kidder

Letterpress, Flexoprinter® and Gravure Presses, Slitters and Rewinders

Over-all view of Halifax's new paper mill, as seen from the existing pulp mill.

Here, black liquor is boiled with lime to produce caustic soda for re-use in digesters. Without its Stainless Steel lining, this could be a "cauldron of corrosion."

Stainless Steel costs more– but lasts 7 times as long!

AT HALIFAX PAPER COMPANY, ROANOKE RAPIDS, N. C.

You could talk for a month about Stainless Steel, but it wouldn't mean as much as this story from Halifax Paper Company's Roanoke Rapids mill:

Inside an evaporator at the pulp mill, carbon steel tubing units were used that cost, including installation, about $2,500 each. They had a *maximum* life of six months. Many of them failed after only *two* months.

In 1954, they replaced with Stainless Steel. The units, installed, cost about $7,000, but these Stainless Steel units are still in service, having given *over 7 times the service* of carbon steel. But that's not all: The tubing was still in excellent condition! Engineers say they expect the Stainless units to last indefinitely.

Every time you encounter a severe corrosion problem in a paper plant, Stainless Steel, judiciously used, can reduce the long-run maintenance cost. Naturally, you get the maximum usefulness from Stainless when you use it from the very start. And you get the best in service-tested quality when you specify USS Stainless Steel.

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Dura-Loft* Felt

OUTSTANDING COMPANION OF THE WORLD-FAMOUS TENAX FELT

And DURA-LOFT'S special qualities go far deeper than its obviously "different" texture and appearance. The research back of the development of DURA-LOFT endowed this new felt with operating qualities never before built into a papermakers' felt.

Your Lockport Felt representative has complete DURA-LOFT specifications and samples.

*TRADE MARK

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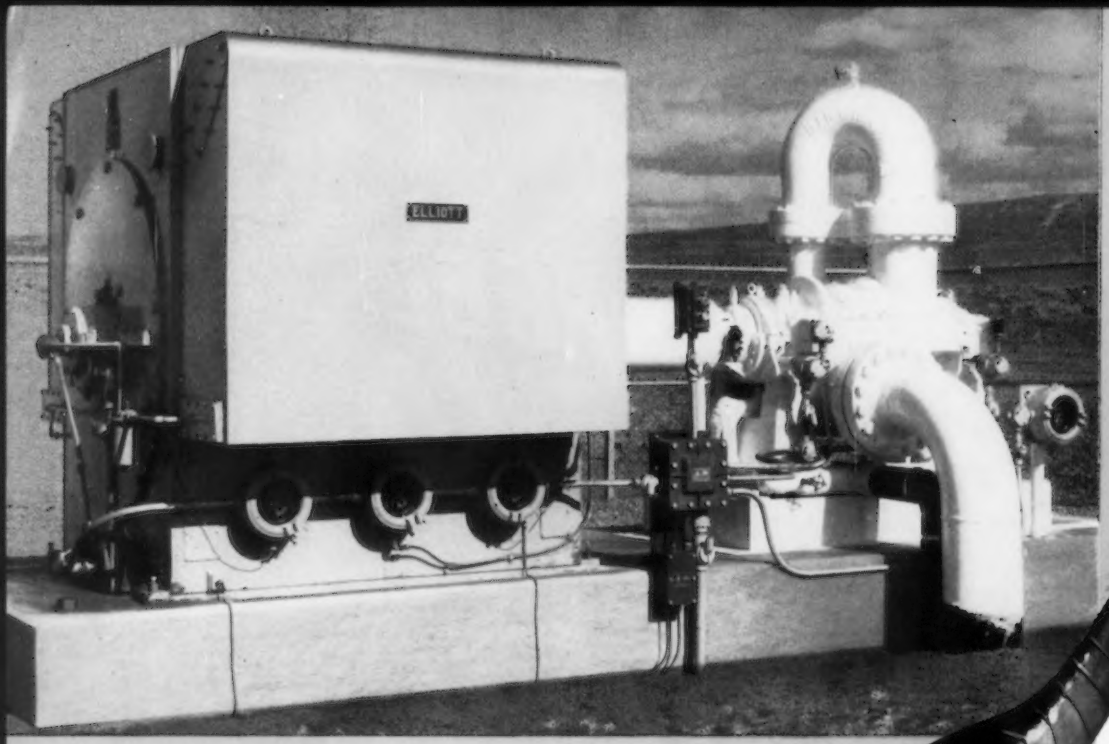
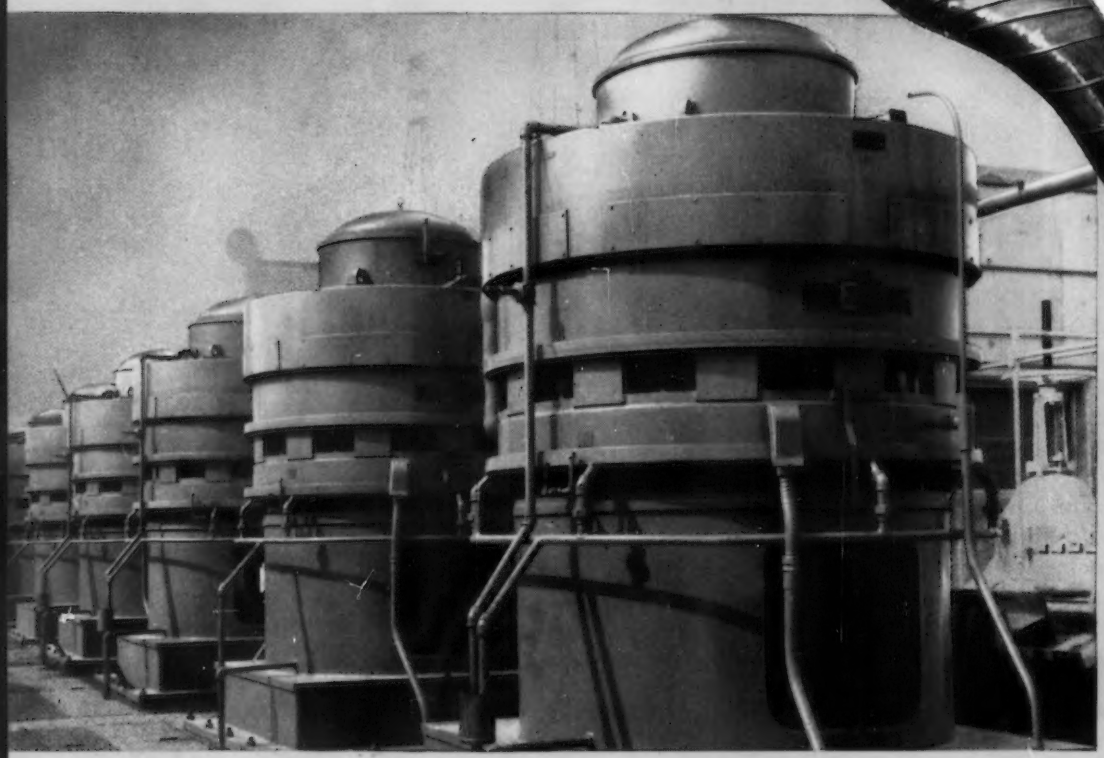




ELLIOTT Company

Ridgway Division, Ridgway, Penna.

in 1,900,000 HP of squirrel-cage induction motors . . .

not one insulation failure in 8 years with ELLIOTT

ELLIOTT Fabri-Seal INSULATION

Fabri-Seal insulation

The most astounding record of large motor dependability is this 8-year uninterrupted service of Elliott motors with Fabri-Seal insulation!

To achieve this, Elliott engineers devoted over ten years of intensive research and laboratory testing to create the Elliott Fabri-Seal insulation system for large induction motors. The finest insulating materials were meticulously selected and tested. Years of experimentation went into the development of improved methods of coil fabricating—such as exacting application by hand-wrapping critical areas and sealing the most vulnerable points. The objective was to achieve a coil insulating system—superior in every detail—to withstand severe temperatures, moisture and chemical fumes and assure long trouble-free life.

Since 1948, 1,900,000 hp of large squirrel-cage induction motors with Fabri-Seal coil insulation have been put into actual field service. The result was unprecedented. In eight years, *not one Elliott large induction motor stator coil has failed due to insulation breakdown.*

What's more, 700,000 hp of these were Elliott weather-protected motors (similar to installations seen here). And, although these machines are operating in rigorous outdoor applications in extremes of humidity, rain, snow, sleet, hurricanes, desert heat, oil fumes and salt spray—*not one of them in 8 years*—has failed due to faulty insulation.

R7-26

Elliott's outstanding Fabri-Seal insulation "field-proven" for over 8 years . . . shatters all previous service records!

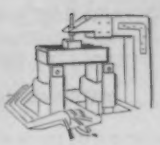
IMMERSION "TORTURE-TEST"
quickly locates potential trouble-spots. It has been vitally important in the perfection of Elliott Fabri-Seal insulation.

MYLAR*-BACKED MICA WRAPPER
—hand-wrapped around all stator coil slot sections—proven ability to withstand severe temperature and age.

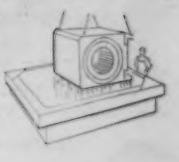
*Dupont trademark

SEALED AT VULNERABLE POINTS
Prevents entrance of moisture or contaminants which commonly cause failure in conventional insulating systems.

VACUUM AND PRESSURE IMPREGNATION
Air and moisture are removed, then moisture- and acid-resistant insulating varnish penetrates coils.



TURN-TO-TURN TESTED
Subjects each turn to high surge voltage many times greater than normally imposed in actual field service.



EVERY STATOR COMPLETELY IMMERSED
in special, flexible varnish, then baked. Coil end-turns, leads and joints given two more dips and bakes.

The answer is—in any situation where you need urgent help from an outside source.

Say, for instance, you have the responsibility of selecting pipe and tubing for industrial installations. You are planning to enlarge facilities in a paper mill. Your task is to choose a steel analysis that will do the work dependably, efficiently, and at the lowest cost. You know your job, you're confident, but still—it's a big responsibility.

That's when your telephone suddenly becomes your best friend. You pick it up and call National Tube. Our technically trained Mill Service Force, always available for consultation in the field regarding your tubing problems, quickly analyzes your specifications, and recommends the most suitable tubing for the job at the lowest cost to you. It's probably the same analysis that you chose, but at least you have peace of mind, knowing your judgment has been backed-up by 60 years of specialized tubing experience.

And what does this helping hand cost you? Nothing but a telephone call.

National Tube manufactures seamless pipe and tubes in a complete range of steel analyses from low carbon through the alloys up to and including stainless steels. A wide range of sizes and wall thicknesses is available for every mechanical and pressure purpose.

WATCH the **United States Steel Hour** on TV every other Wednesday.

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(Tubing Specialties)

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WALLS WITHOUT WELDS

USS

NATIONAL SEAMLESS PIPE and TUBES

UNITED STATES STEEL

For an excellent MOISTURE BARRIER coat with PETROTHENE®

POLYETHYLENE RESIN

Details on Back

Polyethylene because of its low cost, high water vapor resistance, and excellent heat sealing properties, is becoming more and more popular for moisture barrier applications. It coats practically everything used for flexible packaging of industrial or consumer items. It adheres tightly to papers, fabrics, films and foils. It adds strength, too.

Petrothene paper coating resins have these advantages over many other polyethylenes . . .

- ✓ HIGHER PRODUCTION RATES
- ✓ EXCELLENT ADHESION
- ✓ NO ODOR

Want to learn more about Petrothene? Mail the coupon below.

Polyethylene coatings add strength and moisture resistance in packaging

- chemicals
- cosmetics
- drugs
- foods
- hardware
- industrial parts
- machinery
- textiles
- tobacco
- and many others

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I would like more information on PETROTHENE Polyethylene.

My application is _____

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☐ ask a technical representative to call.

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When is a telephone your best friend?

The answer is—in any situation where you need urgent help from an outside source.

Say, for instance, you have the responsibility of selecting pipe and tubing for industrial installations. You are planning to enlarge facilities in a paper mill. Your task is to choose a steel analysis that will do the work dependably, efficiently, and at the lowest cost. You know your job, you're confident, but still—it's a big responsibility.

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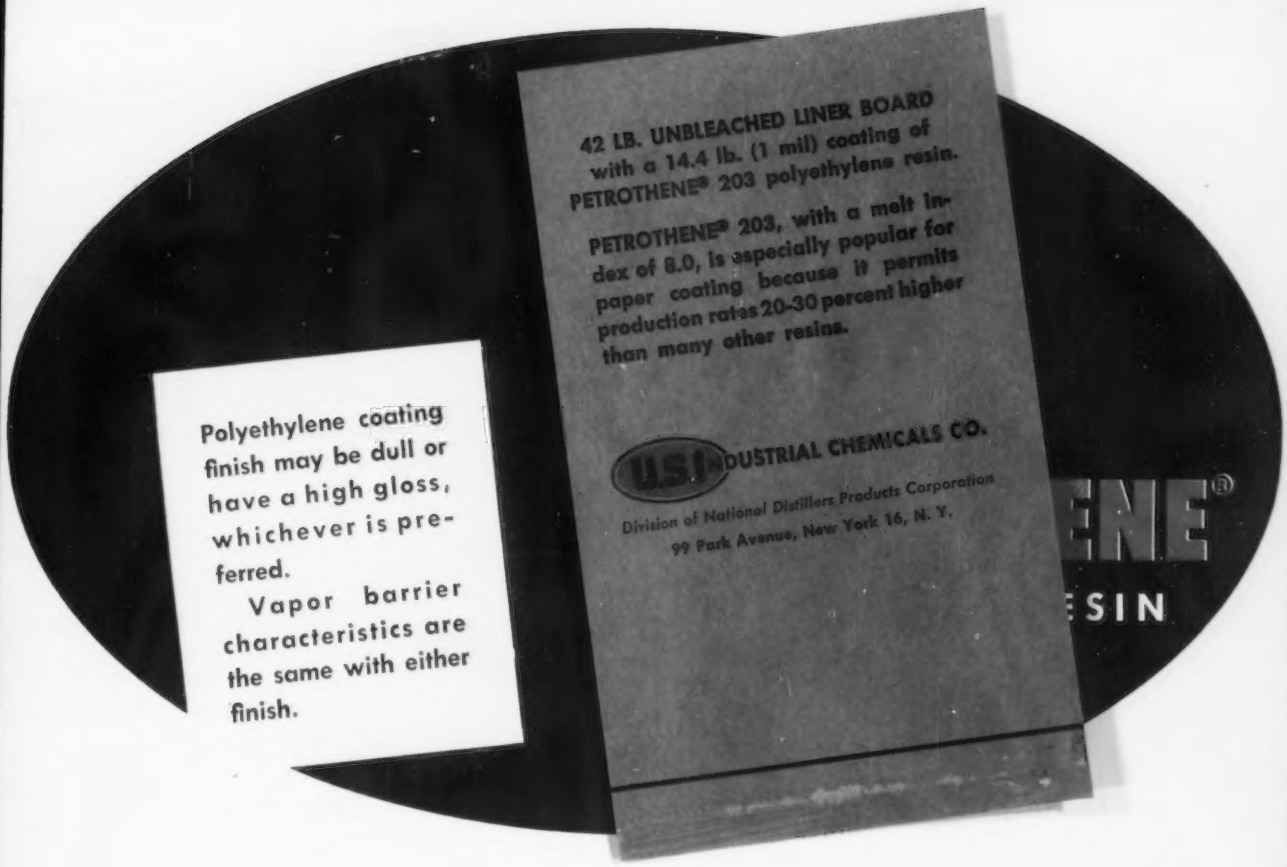
NATIONAL SEAMLESS PIPE and TUBES

UNITED STATES STEEL


42 LB. UNBLEACHED LINER BOARD
with a 14.4 lb. (1 mil) coating of
PETROTHENE® 203 polyethylene resin.
PETROTHENE® 203, with a melt index of 8.0, is especially popular for paper coating because it permits production rates 20-30 percent higher than many other resins.
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Petrothene paper coating resins have these advantages over many other polyethylenes . . .

- ✓ **HIGHER PRODUCTION RATES**
- ✓ **EXCELLENT ADHESION**
- ✓ **NO ODOR**

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Polyethylene coatings add strength and moisture resistance in packaging

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- cosmetics
- drugs
- foods
- hardware
- industrial parts
- machinery
- textiles
- tobacco
- and many others

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My application is _____

Please ☐ send literature

☐ ask a technical representative to call.

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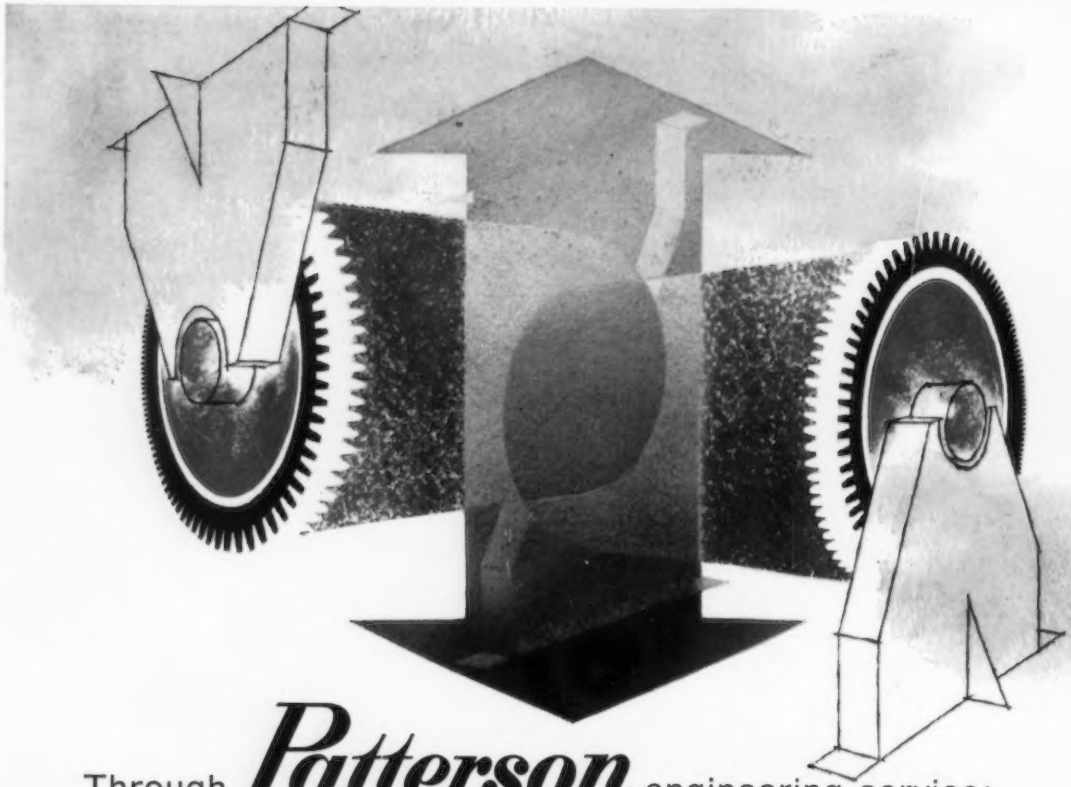
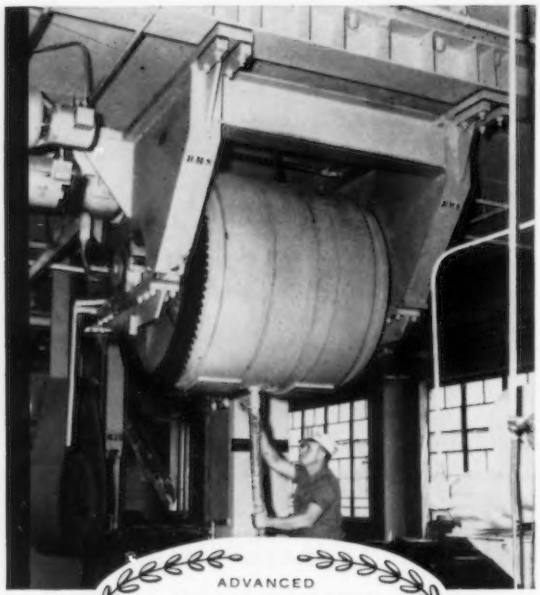
TITLE _____

COMPANY _____

ADDRESS _____



Through *Patterson* engineering service:



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Wherever ball and pebble mills grind, new efficiencies can be developed by skilled operations analysis! For the chemical industry, Patterson engineering service is available for complete grinding room modernization surveys, including equipment relocation, materials handling improvements and all related factors—based on the experience of the Patterson organization in solving industry's grinding problems for more than 90 years. Let us arrange to have a Patterson engineer sit down with you for a preliminary discussion at your convenience, without obligation. **Write us.**

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They Call Her

"Hard Hearted Hannah"

This is *one* sheet that won't reach the customer! Rejected at the sheeter because of a minor flaw spotted by "Hannah's" sharp eye. Being *particular* is this young lady's job. She's one of the finishing room inspectors at Eastex. As the paperboard passes through the sheeter, it's her *yea* or *nay* which says *go* or *no*. The slightest defect is cause for rejection.

"Hannah" — and others like her at Eastex — see that you get *nothing* but the *best* in pulp and paperboard. Another reason why the name Eastex is highly regarded by those who demand a quality product.

Eastex Grades available:

Chlorine dioxide bleached softwood and hardwood pulp

Bleached converting Fourdrinier board grades for: paraffined cartons, frozen-food containers, pails, plates, trays, liquid-tight containers, cold- and hot-drink cups, milk-bottle hoods, and many other miscellaneous grades

Texcote — Eastex's new solid bleached sulfate coated folding box board

Merchant grades of white and manila tag and index

Semi-bleached grades of converting tag, file folder and tabulating

EAST TEXAS *Pulp and Paper Company*

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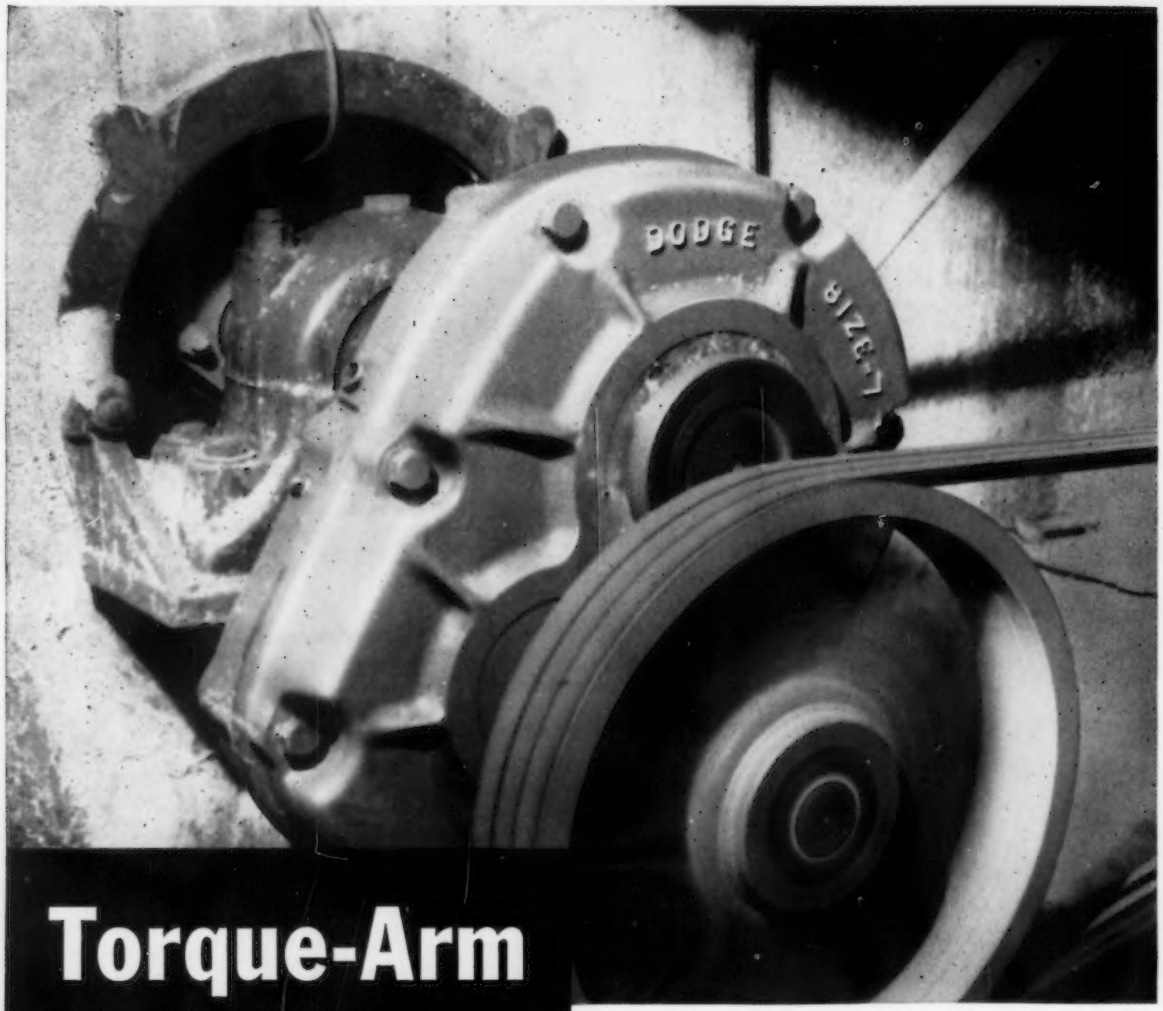
Silsbee, Texas
Telephone—EVergreen 5-3711

Eastern Sales Office
122 East 42nd St.,
New York City, N. Y.
Telephone—OXford 7-2980

Midwest Sales Office
1003 Builders Bldg.,
Chicago, Ill.
Telephone—RAndolph 6-1068

Western Sales Offices
1151 South Broadway,
Los Angeles, Calif.
Telephone—RIchmond 7-6126

210 California Street,
San Francisco, Calif.
Telephone—SUtter 1-6123

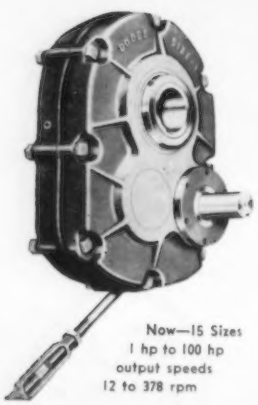


Torque-Arm

SHAFT-MOUNTED SPEED REDUCERS

Size 7 Torque-Arm Speed Reducer on agitator in paper mill

Save Up to 1/3 in Installation —Deliver 97% Efficiency!



Now—15 Sizes
1 hp to 100 hp
output speeds
12 to 378 rpm

Easy to install! Mounted directly on the driven shaft. Locked at both ends. Dodge Torque-Arm Speed Reducer requires no foundation, no flexible coupling, no sliding base, and there's no lining-up problem. Amazing economy is matched by efficiency in operation—up to 97%.

Unit is driven through V-belt drive. Stock Taper-Lock Sheaves prescribed for each job permit speed ratios required. Tri-Matic Overload Release and backstop available, if desired. Dodge Torque-Arm is America's most complete line of shaft-mounted Speed Reducers. Ask your Dodge Distributor—or write us.

•

DODGE MANUFACTURING CORPORATION
2900 Union Street, Mishawaka, Indiana

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new methods. Look for his name under "Power Transmission Machinery" in the yellow pages of your phone book—or write us.

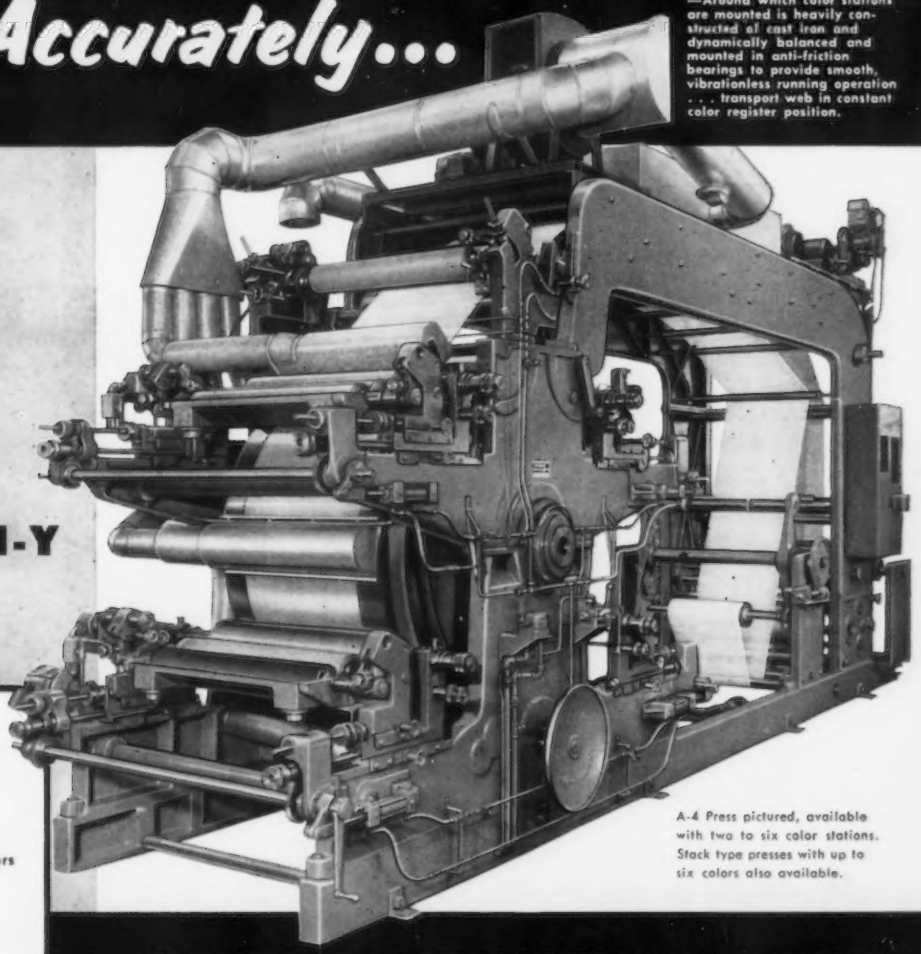
DODGE
of Mishawaka, Ind.

Register Accurately...

Single Impression Cylinder

—Around which color stations are mounted is heavily constructed of cast iron and dynamically balanced and mounted in anti-friction bearings to provide smooth, vibrationless running operation . . . transport web in constant color register position.

Highly detailed screen or line COLOR PRINTING ON S-T-R-E-T-C-H-Y FILMS



A-4 Press pictured, available with two to six color stations. Stack type presses with up to six colors also available.

Constant register FLEXO-PRESS prints two to six colors with hairline accuracy on all types of packaging films, foils, papers and heavy-duty wraps

Check carefully these important advantages:

- High speed printing up to 1000 ft. per minute
- Standard presses with two to six colors
- Prints 20" to 50" widths, repeats 12" to 36"
- Continuously agitated splash-proof ink fountains
- Hydraulic color throw-outs
- Prints 1 mil. film to heavy weight papers
- Anilox type transfer rolls
- Automatic tension web controls for accurate print register and repeats
- Constant print repeats increase operating efficiency of automatic bag and packaging machines
- Handles unevenly wound rolls or webs of varying caliper
- High speed surface driers of advanced design between colors and before rewinding
- Flying splice unwind and rewind for continuous operation, optional
- Vibrationless, heavy duty cast iron construction
- Anti-friction bearings thru-out
- Easiest of all presses to operate—holds register at all speeds
- Reduces down-time and material waste to the minimum

High speed color printing of the finest quality on Polyethylene, Pliofilm, Mylar, Saran and other materials is greatly simplified with this modern press.

Holding *color impressions in accurate register* and *print repeats* over long runs is no problem. Once set, this press holds register at all speeds without readjustment. Web *locks-in* position on a single impression cylinder and is transported from color to color *without stretch or expansion.* Measured tension controls on both infeed and outfeed regulate stretch and keep repeats in constant register — even though roll may be unevenly wound or web of varying caliper. Prints materials of variable thickness from 1 mil. films to heavy weight papers.

Heavy duty, cast iron construction assures years of trouble-free service and smooth, vibrationless running operation even with the hardest of usage. Users acclaim our A-4 press as the easiest to operate—the most economical in down-time and material waste. Write us — we'd like to discuss its many advantages with you.

Other Hudson Sharp machines include Roto and oil ink presses, Automatic Roll Winders, Waxers, Embossers, Laminators, Folders, Core Winders, Crepers and Campbell Wrappers.

CONVERTING AND PRINTING EQUIPMENT

HUDSON-SHARP MACHINE CO.

GREEN BAY, WISCONSIN

SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

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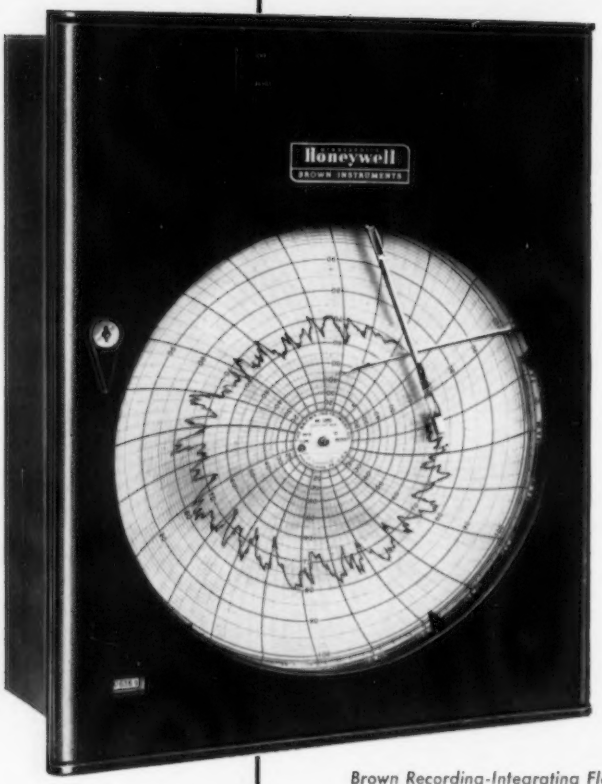

Brown Recording-Integrating Flow Receiver

HONEYWELL FLOW METERS HANDLE THESE AND MANY OTHER FLUIDS:

white water
raw water
boiler water
stock
steam
fuel oil
air
chemical liquors
chlorine
chlorine dioxide
bleach
caustic
hypo

Accurate cost accounting begins with Honeywell flow meters

WHAT is the cost of process flows for your bleach plant . . . washers . . . evaporators . . . digesters? You must have accurate records of the quantities of steam, water, air, chemicals, fuel oil and other fluids supplied to each department to know where your money goes and why.

Honeywell Flow Meters aid cost accounting by providing:

1. Continuous totalizing of flows.
2. A means of establishing an accurate basis of costs.
3. A close check on waste, enabling savings in steam, water and chemicals.
4. Warning of abnormal conditions which could be costly if unremedied.

They provide continuous, accurate flow measurement and fast, precise, electronic integration. All instruments are designed to withstand severe industrial conditions, and require only a minimum of maintenance.

Call your nearby Honeywell sales engineer for details. He's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.

• **REFERENCE DATA: Write for Catalog 2321**

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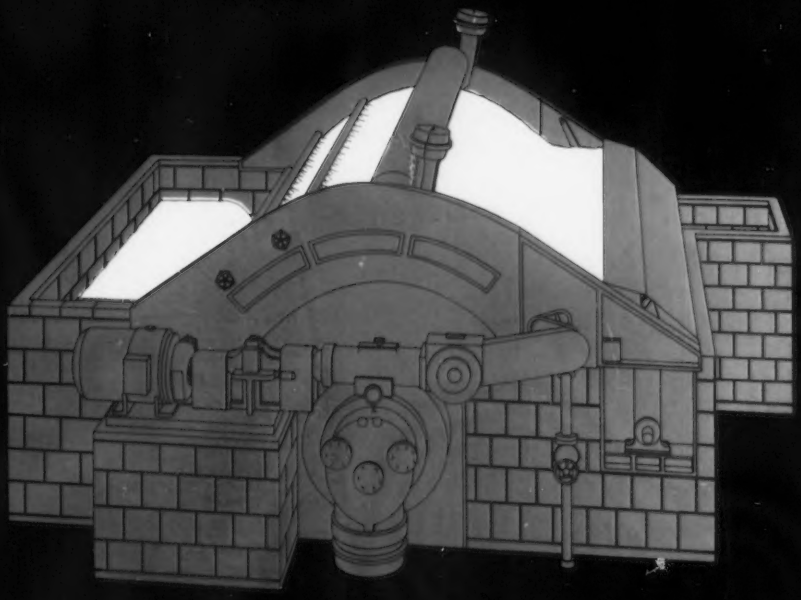
Honeywell
BROWN INSTRUMENTS

H HONEYWELL

First in Controls



IMPCO

VACUUM FILTERS

BUILT TO YOUR EXACT
SPECIFICATIONS FOR —

- ★ BROWN STOCK WASHING
- ★ RED LIQUOR WASHING
- ★ DECKERING
- ★ BLEACHED PULP WASHING
- ★ SAVEALLS

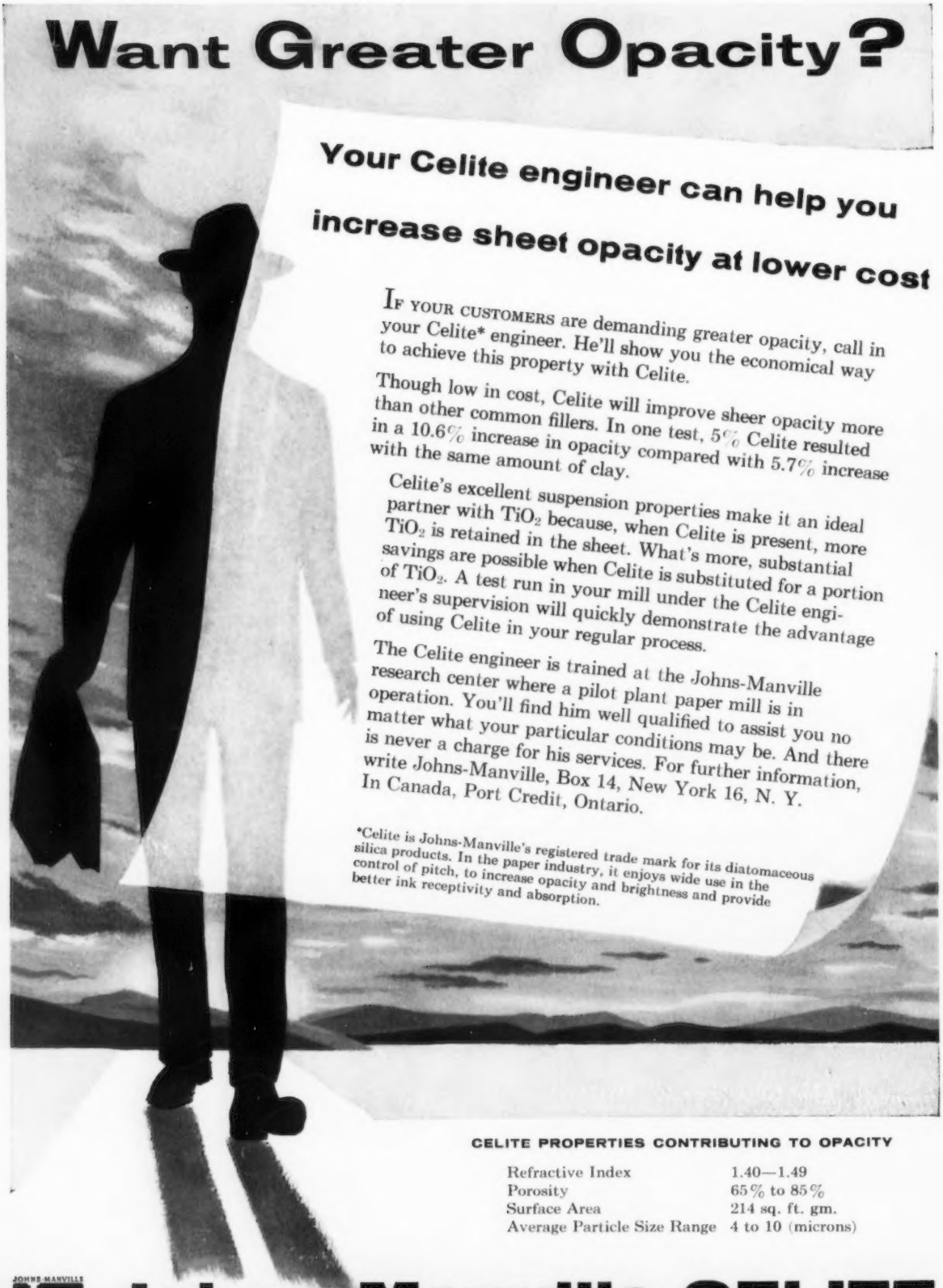
IMPCO®

IMPROVED MACHINERY INC.

NASHUA • NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Limited, Sherbrooke, Quebec

Want Greater Opacity?



Your Celite engineer can help you increase sheet opacity at lower cost

IF YOUR CUSTOMERS are demanding greater opacity, call in your Celite* engineer. He'll show you the economical way to achieve this property with Celite.

Though low in cost, Celite will improve sheer opacity more than other common fillers. In one test, 5% Celite resulted in a 10.6% increase in opacity compared with 5.7% increase with the same amount of clay.

Celite's excellent suspension properties make it an ideal partner with TiO_2 because, when Celite is present, more TiO_2 is retained in the sheet. What's more, substantial savings are possible when Celite is substituted for a portion of TiO_2. A test run in your mill under the Celite engineer's supervision will quickly demonstrate the advantage of using Celite in your regular process.

The Celite engineer is trained at the Johns-Manville research center where a pilot plant paper mill is in operation. You'll find him well qualified to assist you no matter what your particular conditions may be. And there is never a charge for his services. For further information, write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products. In the paper industry, it enjoys wide use in the control of pitch, to increase opacity and brightness and provide better ink receptivity and absorption.

CELITE PROPERTIES CONTRIBUTING TO OPACITY

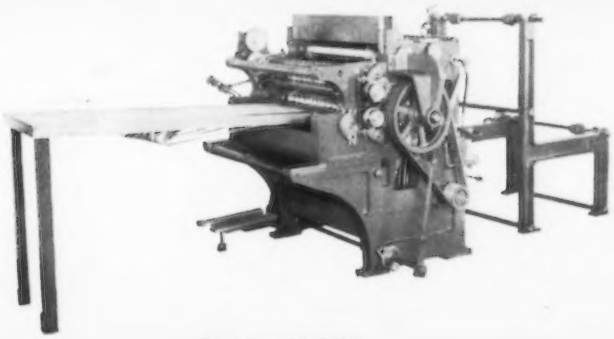
Refractive Index	1.40—1.49
Porosity	65% to 85%
Surface Area	214 sq. ft. gm.
Average Particle Size Range	4 to 10 (microns)

JOHNS MANVILLE JM PRODUCTS

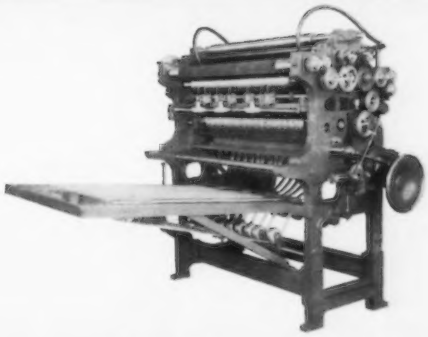
Johns-Manville CELITE

PRODUCTS FOR THE PAPER INDUSTRY

THESE FOLDERS ARE DELIVERING

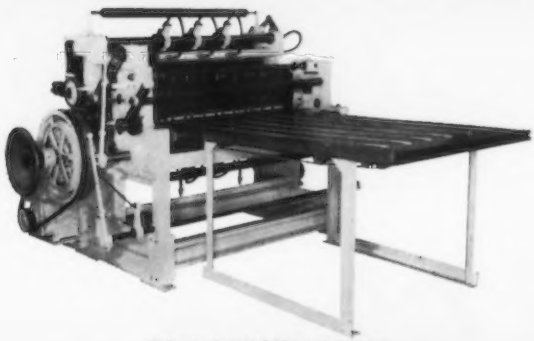


Facial tissue interfolder

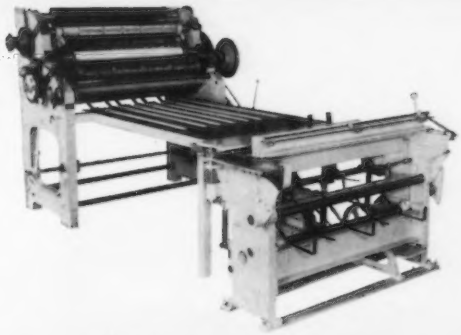


Wax paper interfolder

THE PERFORMANCE WE PROMISED

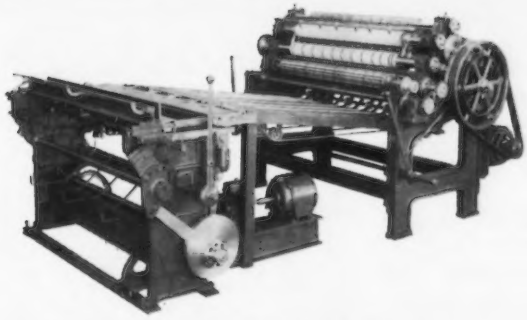


High speed singlefold towel machine

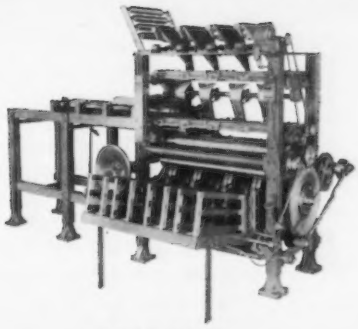


Multifold towel folder and package press

ASK THE COMPANIES THAT OWN THEM



Doublefold toilet tissue interfolder



C-fold towel folder

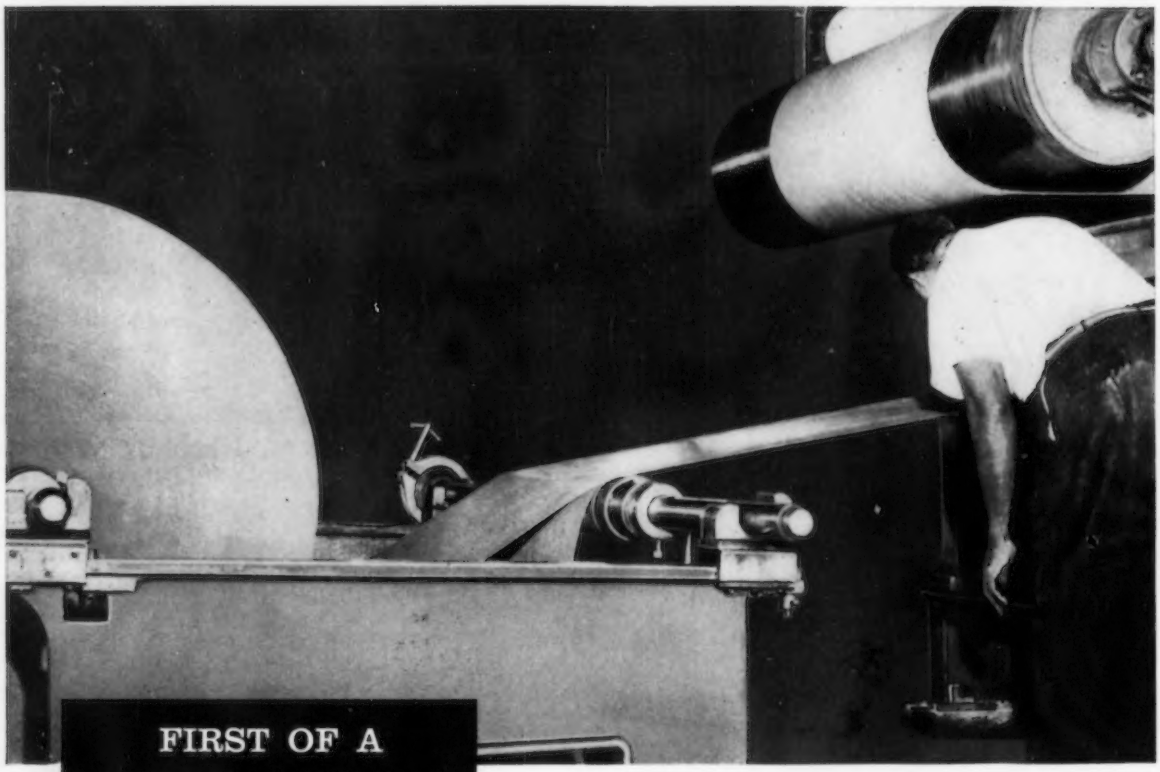
printing presses, rewinders, embossers, folders,
napkin and core machines and special converting machines

PAPER CONVERTING MACHINE COMPANY

GREEN BAY, WISCONSIN

PCMC

C.P. Starches...Try 'em for Size



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FAMOUS LINE FOR
Corrugating
AND
Laminating

Globe®
STARCHES and DEXTRINES

Need a heavy paste of maximum adhesiveness for porous boards? Or a starch that will prevent uneven drying and curling of boards of different absorptiveness? Whether you need a starch for a highly critical operation or for general use at minimum cost, you'll more than likely find it among the Globe Starches and Dextrines—most widely used line of adhesives for corrugating and laminating.

Corn Products makes no fewer than six lines of starches and several dextrine products for these important converting operations. So no matter how tough your problem, how exacting your requirements, you'll find a Corn Products starch that's ideal for the job. Technical assistance in selecting the right one is available without charge or obligation.

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CORN PRODUCTS SALES COMPANY, 17 Battery Place, New York 4, N. Y.
Makers also of **AMIJEL,® HERCULES** and **TEN-O-FILM®** starches for the paper industry

Board Still Leads Paper

As of the first week of October board mill activity continued to lead over paper by a substantial margin. Paper mill activity is very variable at the present time. Some smaller specialty mills are said to be only operating at 75% while mills on different specialty grades are said to be running near capacity.

Corr. Box Shipments Up

Corrugated box shipments in September were at the highest level since last November. This is reflected in the higher paperboard production since the first of September.

Set-Up Boxes Hold Their Own

The dollar sales volume of set-up boxes in August 1957, was almost unchanged from the previous August, according to reporting National Paper Box Manufacturers Assn. members. In addition, the eight month cumulative sales figures of 1957 also show less than 1% variance from comparable 1956 figures. Orders booked during August were 7.3% below August, 1956, bringing the eight month cumulative bookings 1.4% below 1956 totals. It is difficult to report set-up box figures other than in dollar value because of the variable value of the product.

Pulp Price Picture Finalized

Prices of all grades of pulp were increased on October first excepting unbleached and semi-bleached kraft and groundwood. The amount of the increase was $5.00 per ton covering almost all foreign and domestic pulps. In a few isolated cases smaller pulp producers did not change their prices.

Waste Paper Market Firm

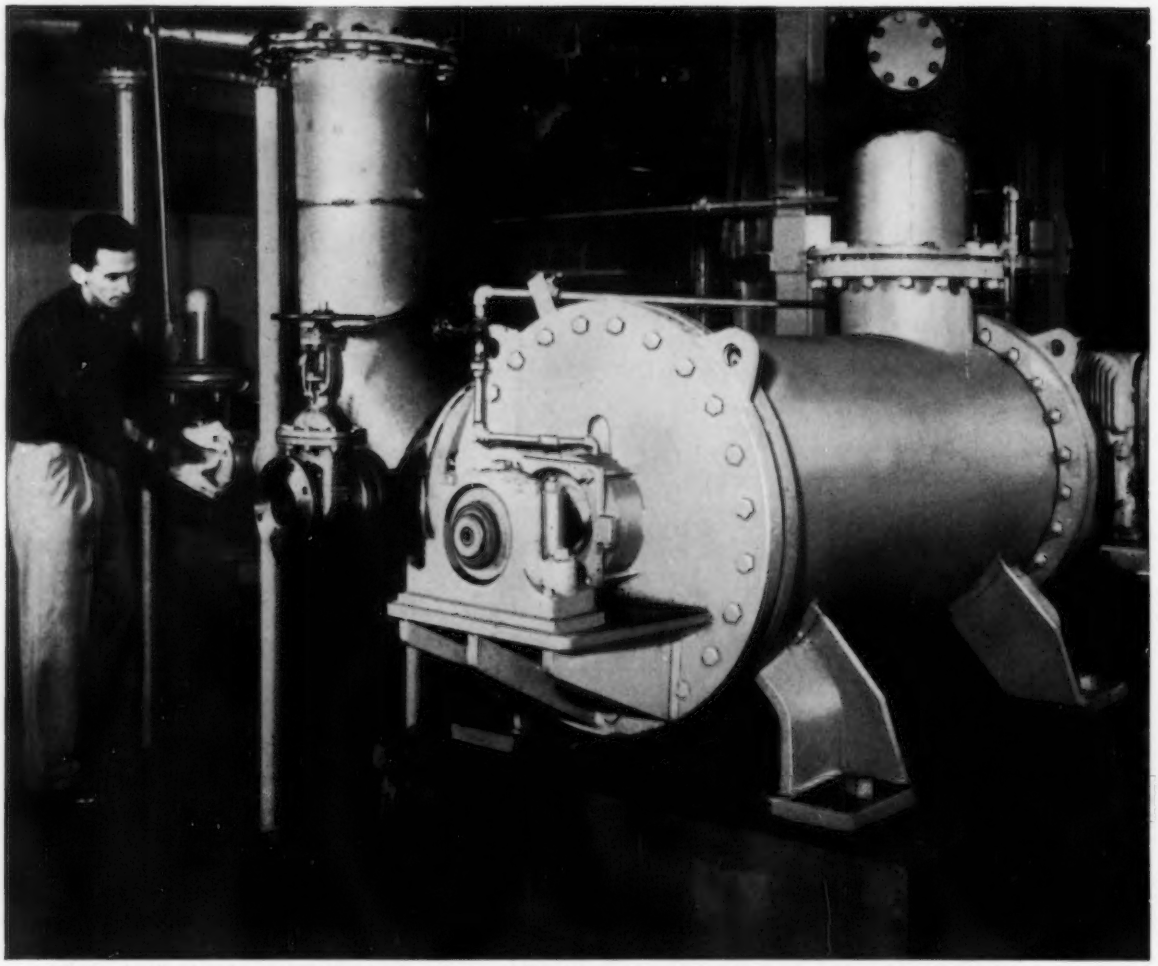
Most grades of waste paper are being sold in good quantities. There are no signs of a general shift in prices. Many grades may be affected however by the increase in pulp prices covering all pulp grades excepting unbleached and semi-bleached kraft.

Production and Market Analysis

For a detailed discussion of our production and market conditions during the first six months of this year, see the articles by Neubrech and Pederson in this issue.

Welcome Change for Mills

An unusual and welcome change at this time is a price reduction for a raw material. Sulphur producers have lowered their price by $2.50 to $3.00 a ton, an 11% decrease. The price of sulphur has stood at $26.50 since 1953. Reason for the decline was decreased demand coupled with competition from Mexican sulphur.



Chlorine dioxide mixer in service at the Carolina Division of Riegel Paper Corp. The unit was manufactured by Improved Machinery Inc. It is lined with ⅛" REM-CRU A-70 titanium sheet.

TITANIUM tames chlorine dioxide bleach

Improved whiteness and reduced fibre degradation—they're the benefits of bleaching with chlorine dioxide. But this fine bleach is also a strong corrosive—it's been known to ruin even very special alloys in five hours.

But there's a way out—*titanium*. Extensive tests have shown titanium to be *virtually immune* to chlorine dioxide attack—in fact, titanium parts are still in service after thirteen months' exposure. That's why the new chlorine dioxide mixer, shown above at the Carolina Division of Riegel Paper Corporation, has all contact surfaces made of REM-CRU titanium.

Titanium's unique properties can help solve other pulp and paper mill materials problems, too. It's strong as steel, for example, yet 44% lighter . . . it withstands attack by an extremely diverse group of corrosive media . . . it is immune to stress-corrosion cracking . . . it is not subject to cavitation corrosion and erosion.

No wonder titanium outlasts other materials by as much as 10, 20, even 50 times! Though titanium equipment may cost two or three times more than that made from other materials—*titanium's longer service life rapidly wipes out this cost differential.*

Where materials failures have been eating into profits—think of REM-CRU titanium. A REM-CRU engineer is well qualified to help you work out specific applications.

Write Dept. PT 10 for the Rem-Cru Review—a free periodical presenting the latest data on titanium.

REM-CRU TITANIUM

World's Most Versatile Metal

MIDLAND, PENNSYLVANIA

H & D (Canada) To Build New Paperboard Mill

Hinde and Dauch Paper Co. of Canada, Ltd. has purchased a 50-acre site in the township of Toronto, which will be used for the establishment of a new paperboard mill.

Hinde and Dauch is a leading manufacturer of corrugated and solid fiber shipping boxes, folding cartons, and is a major producer of paperboard. The company and its subsidiaries presently operate seven paperboard converting plants, comprising shipping bag plants in Toronto, Montreal, Chatham, Peterborough, Winnipeg and Calgary—another such unit is now under construction at St. Marys, Ontario; a folding carton plant in Leaside (Toronto), a paperboard mill in Toronto, producing a variety of those products, chief of which are containerboards and boxboards, and another such mill in Trenton, Ontario, producing semi-chemical corrugating board from mixed hardwoods, as well as other lightweight containerboard materials.

This step by the H&D is another phase of the long-range program by means of which facilities are being modernized and expanded. The intention initially will be to provide an extensive test linerboard manufacturing unit to relieve the pressure on the Hanna Ave., Toronto, operation, and, at the same time, create a new facility which will be highly competitive from a production-cost standpoint.

Champion Prepares New Movie

A script has been approved and actors are now being put under contract for the latest film sponsored by Champion Paper and Fibre Co., Hamilton, Ohio, according to Dwight J. Thomson, Champion's vice president of industrial and public relations.

The film, to be titled "1104 Sutton Road," will deal with a "pretty basic theme," Mr. Thomson said. "It's about how to get more of what you want."

Like the last Champion movie, "Production 5118," it is designed to interest a wide general audience in addition to people more directly connected with industry.

American Can, Marathon May Merge

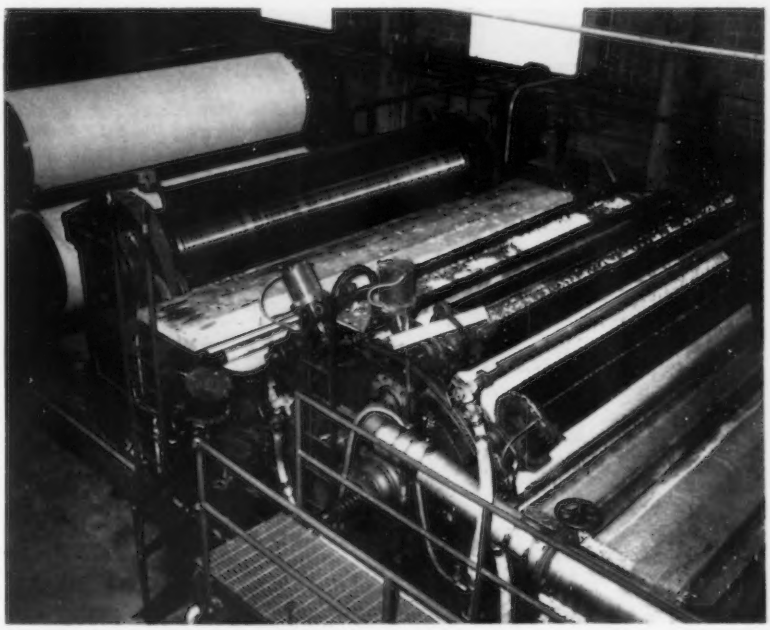
Merger discussions are in progress between Marathon Corp. and American Can Co. This was confirmed by Marathon's president, John R. Stevens at the end of September. It has previously been reported in *Paper Trade JOURNAL* that American Can Co. was actively interested in acquiring paper and paperboard manufacturing facilities, which it now lacks.

Mr. Stevens indicated that while a possible merger was being discussed, no agreement had been reached at time of going to press.

Accept Offer For Pencoyd

An offer of $300,000 for assets of the Pencoyd Paper Co., Philadelphia, Pa., and Watertown, N. Y. has been accepted, according to records on file today in the office of David J. Goldstein, referee in bankruptcy for the Northern District of New York.

Acceptance of the offer made by Sweet's Laboratories Inc., Philadelphia, was reported today as the result of hearings before Mr. Goldstein, the most recent of which was on an order to the debtor to show cause why the Sweet offer should not be accepted.



Spaulding Completes Modernization

Spaulding Pulp & Paper Co., Newberg, Ore., has just completed the modernization of its pulp making facilities with the installation of a Sandy Hill Kamyr wet end on its pulp drying machine. Daily tonnage has been increased from 105 tons in 1949, when Spaulding began the modernization program, to today's 150 tons.

The first major steps in the modernization involved the hydraulic barking plant and the wood handling system. Later Hydroheaters on the digesters were added to the hot acid system. Then the acid plant was modernized by the installation of a spray sulphur burner, Centri-cleaners, and by renovating the screen room.

Now pulp drying has been completely modernized by the Sandy Hill Kamyr wet end, which consists of a vacuum forming cylinder fabricated of stainless steel; two grooved Kamyr presses, and a set of pre-driers between the presses. Following the presses is an Ahlen-Lundberg drier, a Lamb-Grays Harbor cutter Lay-Boy, and baling equipment.

BEFORE rebuilding.

AFTER 30 days.

How Gardner Rebuilt Lockland Mill

On August 4, fire swept through the machine room of Gardner Board and Carton Co.'s Lockland board mill near Cincinnati, gutting the dry end of the two board machines and machine room area, destroying the roof, crumbling walls, and strewing steel beams, brick, and wood over the board machines. Firemen at the scene placed damage between two and four million dollars. Initial estimates called for at least 90 days hard work to put the mill back together again.

But on September 4—thirty-one days after the fire—the mill was back in operation. Colin Gardner III, vice president and general manager, described the repair job as a "remarkable achievement brought about by one of the finest pieces of industrial teamwork I have ever seen."

No one was injured in the fire that started when strips of paperboard trim wrapped around a drive shaft in the basement underneath the front cutter of one of the machines. The friction between the shaft and shavings caused enough heat to ignite the paperboard. An eyewitness said the shavings burst into flame and moved "like a streak of lightning down the line shaft, then up a drive belt to the machine room floor."

Extent of Damage

Most of the damage had been caused by the roof, walls, and trusses falling in on the dry ends of the machines. Damage to the wet ends and dryers was relatively slight. At the dry ends, slitters and cutters were hardest hit.

The repair and material list was a long one. Some examples: machine room walls had to be rebuilt about halfway from the floor up; an entire new roof over half the board mill was needed; seven dryers needed regrinding; frames, shafts, and paper rolls on the slitters were bent; most of the electrical system and air controls on one machine were burned out; 600 feet of drive belts had to be replaced; four bottom calender rolls weighing about nine tons each were out of round; the overhead crane had to be replaced; many electric motors were damaged.

Along with this type of repair work was the necessity for making an overall check of the board machines for any possible damage. Then, too, the undamaged parts of the machines required a general cleaning and scraping job to remove rust from water sprayed over them during the fire.

Fast Schedule Exceeded

Even before the extent of damage had been determined, Gardner had taken steps to begin reconstruction. By the afternoon of the same day as the fire, while parts of the mill still smouldered, wrecking crews moved in to clear away twisted steel beams and knock down loose brick or dangling wood. Cranes (with booms longer than 100 feet), trucks, power machinery converged on the mill. On the same day, burned and water-soaked paper stock had been hauled away.

For a month, repair and rebuilding work continued at the same fast pace.

Three days after the fire, the basement where the fire started had been cleared of rubble. All damaged electric motors had been sent out for repair.

The large overhead crane, bent and damaged beyond repair, was supported on pilings to keep it from collapsing on the board machines. Too large and heavy to be lifted out in one piece, it had to be cut up in sections first. In just four days after the fire, it had been removed and a new crane was on order.

On **August 14,** ten days after the fire, new trusses had arrived. The new overhead crane—with 76-foot long beams—arrived on three flat cars from Muskegon, Mich. in less than three weeks after the fire. It was installed on August 24, being used that same day to hoist other equipment into place.

By **August 27,** twenty-three days after the fire—repaired equipment which had been coming back in trickles turned into a steady stream. As fast as it came in, it was installed. Walls which had collapsed or been weakened were replaced. All roof trusses were in, and about half the roof finished.

According to Gardner, many suppliers "did the impossible for us." He pointed out that a subsidiary company in Middletown, Manchester Machine Co., contributed substantially in getting repaired equipment in shape quickly. One example: building a new coater in 11 days.

On **September 4,** thirty-one days after the fire struck—one of the board machines started rolling again. The other machine followed three days later.

Four Main Factors

Mr. Gardner said there were four main factors responsible for the rapid recovery of the board mill:

"1—Gardner people pitched in. Men rose to the challenge in a way that was heartwarming. It was commonplace to see beatermen, third hands, back tenders, shipping department men working together installing or cleaning equipment. In our two Middletown board mills, crews went on a round-the-clock schedule—including two holidays—to take up the production slack.

"2—The contractors on the rebuilding job were able to move men and machinery in immediately.

"3—Suppliers were extremely cooperative in expediting orders.

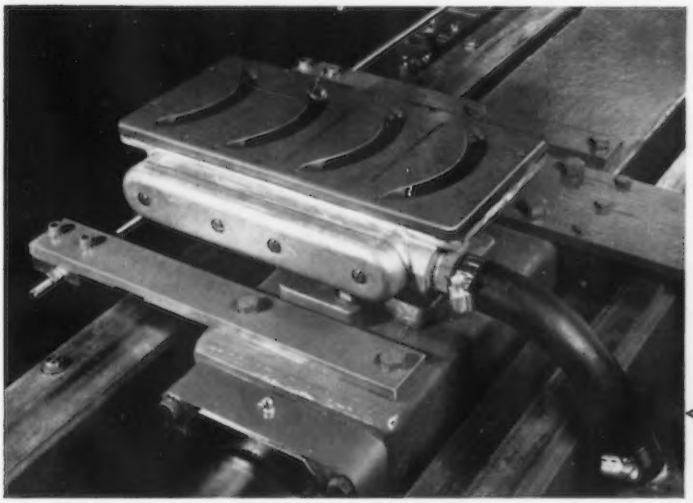
"4—The weather was good, so we didn't have the danger of slipping accidents due to rain."

Low Cost Protection Against High Cost Shutdowns

VICKERY FELT CONDITIONERS

You don't have to shut down the paper machine during the week to unclog press felts when they're equipped with Vickery Felt Conditioners. Felts run open and clean all week long.

Your operating costs are lower, too, for taking water out of the sheet at the presses is a lot cheaper than taking it out at the dryers.



One of the conditioning boxes on the Vickery Wet Felt Conditioner.

CONDITION WET FELTS, TOO

With the new Vickery Wet Felt Conditioner you can keep cylinder machine top and bottom felts continuously open and clean.

Write for full information, recommendations and layouts.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

NEWS OF CONVERTERS

Jack N. White

Jack Gerard

Natl. Container Names Bristol Sales Manager

Jack N. White, formerly assistant sales manager of the Bristol, Pa., plant of the National Container Corp., has been appointed sales manager to replace David H. Blatt, who resigned.

Mr. White's association with National Container began in 1933. He became assistant sales manager at Bristol in 1953, prior to the National-Seaboard merger, and retained his post when National was merged into the Owens-Illinois Glass Co. last year. National Container is now a subsidiary of Owens-Illinois.

Park-Sunbeam Moves

Park-Sunbeam Folding Box Co. is moving from New York City to larger quarters at 357 Wilson Ave., Newark, N. J.

Mead Subsidiary Acquires Memphis Plant

Mead Containers Inc., wholly owned subsidiary of Mead Corp., has acquired the total assets of Shelby Paper Box Co., Memphis, Tenn.

Shelby was organized in 1922 by John C. Kain, Sr. The Memphis plant employs approximately 300 persons producing shipping containers, folding boxes, and multi-packing cartons.

There will be no change in the management and personnel of the Memphis operation which is now the Shelby Division of Mead Containers Inc.

Mead Containers' other box manufacturing operations are: Jackson Division, Cincinnati, Ohio; Durham Division, Durham, N. C.; Industrial Division, Chicago, Ill., and Palm Division, Miami, Fla.

Mosstype Appoints Gerard Sales Manager

Jack Gerard has been advanced from assistant sales manager to sales manager by Mosstype Corp., Waldwick, N. J. A member of the company's sales-service staff since 1952 and previously manager of its order department, he has over ten years experience in flexographic printing.

In his new capacity Gerard will head all sales and service activities relating to Mosstype's rubber plates and design rollers, "D-Mount" plate cylinders, "Mounter-Proofer" machines and other products.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending September 21, 1957, was 90.8 per cent compared with 90.9 per cent revised for the preceding week. The ratio was 100.7 per cent for the corresponding week a year ago. Mills producing newsprint exclusively are not included.

The paperboard production ratio for the week ending September 21, 1957, was 96 per cent, compared with 98 per cent for the preceding week and 94 per cent for the corresponding week last year.

(Detailed statistics on page 70.)

Adams Converting Appoints Roen

Adams Paper Converting Co., Monroe, La., has appointed Leslie G. Roen of Twin Lake, Mich. a direct mill representative in the states of Michigan, Indiana and Ohio, on sales of waterproof papers, waxed papers, and resin and latex laminated papers to paper merchants.

New Mat Eliminates Shrinkage Problems

A new thermosetting mat completely eliminating the problems caused by progressive shrinkage has been developed for use in the production of rubber printing plates. This shrinkage elimination is attained without the aid of perforated metal control sheets. This means that accurate rubber plates can now be produced by using only one board—whereas hithertofore two boards and one perforated metal sheet normally have been required.

The new product is called Wood Thermomat. It has been developed jointly by Wood Flong Corp., Hoosick Falls, N. Y., and Riegel Paper Corp., New York City. It is manufactured under an exclusive, patented process for sole distribution by Wood Flong.

According to Wood Flong, for the last several months, the Wood Thermomat has been satisfactorily tested under actual operating conditions by a number of printers.

In addition to eliminating progressive shrinkage, the Wood Thermomat is said to have the following advantages:

1—It will mold deep impressions from dies as well as impressions from metal originals and standard type forms. Thus, it can be used to mold mats from dies, which are used extensively in printing bags used in various types of packaging. In this application, the use of molding powders is not required because the Wood Thermomat's superior moldability picks up the deep impressions.

2—It has as much as 75 per cent less floor variation than mats now being used to mold rubber printing plates. It will, therefore, produce rubber plates that have more uniform printing surfaces. The more uniform printing surfaces thus obtained means that substantially less time is required for plate grinding.

3—It will not blister, pick or develop pin holes which make a mat unuseable.

Because the new product eliminates progressive shrinkage, rubber printing plates produced from it are always uniform in size. Therefore they provide perfect register in color printing.

Looking for more ...BRIGHTNESS.. ...OPACITY...

...in your filler grades?

The answer may be a higher grade of filler clay. HUBER's X-43 is produced under rigid coating clay specifications. It has been successfully used in several mills for upgrading finished sheet quality—at minimum cost. Its fine particle size and higher brightness make it an ideal filler in cases where lower cost pigments fail to do the necessary quality job for you.

Send for your sample of HUBER X-43 and *try* it.

Specifications for X-43:

Brightness	84 - 85.5
Particle Size	78 - 79% under 2 microns
Retention	in most cases comparable to the coarser filler clays
Physical Form	Available in lump or pulverized form—in bulk or bagged

Continuous drum-type filter

HUBER

J. M. HUBER CORPORATION, 100 Park Avenue, New York 17

Headquarters for Clay Technology • Developers of VISCONTROL® • Authors of "Kaolin Clays and Their Industrial Uses" • Producers of a Complete Range of Clays for Modern Papermaking

MINES AND PLANTS: HUBER, GA., LANGLEY, S. C.

PAPER PEOPLE

Stamm Honored On Retirement

Edward P. Stamm, Crown Zellerbach Corp. vice president for Northwest timber operations, who retired September 30, was honored by 375 friends and associates at a dinner in Portland's Multnomah hotel recently.

Powell Chooses New Executive VP

John E. Liersch has been appointed to the newly created post of executive vice president of Powell River Co. Ltd.

Mr. Liersch has been vice president in charge of forestry and logging operations for the company since 1950. He was one of the early forestry graduates from the University of British Columbia, and began his employment with the Provincial Forest Service. In 1929 he won a fellowship which took him to the University of Washington for a master's degree. He continued research studies under a Charles Lathrop Pack scholarship, concentrating on selective logging.

Institute of Paper Chemistry's Largest Class

The largest class in the history of the Institute of Paper Chemistry—27—enrolled at Appleton, Wis. in August. They are shown with members of the Institute faculty on the steps of the administration building at the Trees For Tomorrow Camp, Eagle River, where they spent 2½ weeks during September on a combined "bush trip" and indoctrination course.

Front row, kneeling—left to right: Dr. J. Edward Todd, Dean of Admissions; Dr. Malcolm May, Chief of P.A.P.; Dr. Roy P. Whitney, Dean of Institute of Paper Chemistry.

Row 1—left to right: Joseph Bergomi, University of Maine; John Mattor, Bates College; Kyaw Tun, Rangoon University, Burma; Edwin Arnold, Massachusetts Institute of Technology; Richard Schmalz, Centre College, Kentucky; Karl V. Kraske, University of Maine; Thomas W. Myers, Yale University; Jon Hamelink, Hope College, Michigan; William Friend, University of Cincinnati, Ohio.

Row 2—left to right: Robert Jones, Rensselaer Polytechnic Institute, Charles Spalding, University of Wisconsin; Robert Peacock, Montana State University; Edward Elton, Stevens Institute of Technology; David Taylor, Princeton University; Frederick Dunwell, Michigan College of Mining & Technology.

Row 3—left to right: James Haggerty, Colgate University; James Beatty, Drexel Institute of Technology; James Roell, St. Ambrose College, Iowa; Patrick Trotter, Oregon State College; Raymond Sommers, Wisconsin State College, Stevens Point.

Row 4—left to right: Sam Dorcheus, University of Idaho; Frank Wabers, University of Wisconsin; Robert L. Schneider, Rochester Institute of Technology; Ronald Ott, University of Wisconsin; James Parker, Lawrence College, Wisconsin; Robert Thiessen, Western Michigan University.

Hosmer Elected Millers Falls Pres.

Walker J. Hosmer has been elected president of the Millers Falls Paper Co. in Millers Falls, Mass. He was also renamed general manager.

As president he succeeds R. F. Chapin who served as president for eight years and who is now vice chairman of the board of directors. Joseph A. Constance was promoted from plant manager to vice president while Peter F. Dellaluna was advanced from assistant to plant manager.

Mr. Hosmer was also renamed the treasurer and Wallace C. Stebbins, assistant treasurer. Directors renamed were, Carroll J. Hoffman, chairman; Frederic E. Abbe, Edward P. Bagg, 3d, Malcolm K. Cameron, and Mssrs. Chapin, Constance, Hosmer, Roy E. McCorkindale and John R. Moseley. Mr. Chapin recently completed 48 years of service and announced that he plans a less active schedule after January 1.

Engineer Named To Westvaco Post

John W. Churchill has been appointed chemical engineer on the technical service staff of West Virginia Pulp and Paper Co.'s Tyrone, Pa. mill.

Mr. Churchill formerly headed particle board plant research activities at Timber Engineering Co., Washington, D. C. In his new post he will help in the development of Tyrone's recently announced particle board plant, which is expected to be in production sometime in 1958.

Two New VPs For Howard Smith

Howard Smith Paper Mills Ltd., has appointed two new vice presidents: John Miller Thompson, vice president of finance, has had wide business experience and was formerly vice president in charge of finance of the Canadian Westinghouse Co. Ltd. W. F. McColm, vice president of woodlands, is a B.Sc. in Forestry of the University of New Brunswick. Well-known in Eastern Canadian forest, operations, Mr. McColm has been woodlands manager of Donnacona Paper Co. Ltd. for the past ten years.

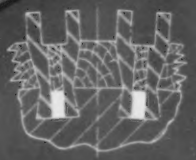
E.D. Jones Adapta-Plug

Here's Proof

In a large East Coast mill* an Adapta-Plug was recently refilled for the first time. Used in a Jones Majestic Jordan, with Nowave Fulbar Shell Filling not only had it outlasted previous plug fillings, by 50% to 100%, but the bars—worn to 1-1/4" from their original 2"—were perfectly straight.

Most impressive, however, was the time required for the refilling . . . a total of only 6 hours for the complete strip and refill operation!

* name on request



Inverted wedge type slotting is the same for all bars — change fillings to meet any condition without changing plug.

The strongest, most adaptable most economical plug ever!

Growing continually in popularity, this completely bandless Jordan plug — a revolutionary advance in plug design, exclusive with Jones — is more easily stripped and filled, holds bars more firmly in place, reduces slot wear and corrosion, and affords a versatility of use never before obtainable. Available in solid plug, or Meehanite sleeve form for easy changeover on old plugs. Ask your Jones representative or write today for Bulletin EDJ-1094.

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts
Builders of Quality Stock Preparation Machinery

IN CANADA: The Alexander Fleck, Ltd., Ottawa

Export Agents: **CASTLE & OVERTON, INC., New York 20, N. Y.**
Foreign Licensees: **FRANCE Batignolles-Chatillon • SPAIN Gabilondo • ITALY de Bartolomeis • JAPAN Mitsubishi •**

now 700 ~~OVER 300~~ FULBAR SHELL FILLINGS IN USE

The rigidity and accuracy of Fulbar one-piece construction eliminates keys and wedges, fits the shell body of any Jordan — readily compensates for inequalities which would make precise fitting of a sectional filling a problem. Amazingly easy to install . . . easy to grind in, too . . . and no sharp ends on bars to form strings or lumps. Many more new advantages, too . . . write today for details and names of satisfied users.

Recent M & O Appointments

Henry Stormo, former assistant superintendent of electric power at International to superintendent. W. C. Rindsland of International Falls control engineering staff to assistant chief engineer. W. T. Peterson, project engineer at International Falls to plant engineer. W. D. Leydier of the Kenora engineering staff to superintendent of electric power at Kenora. W. R. Karlstad from materials control clerk in the engineering department to maintenance schedule supervisor at International Falls.

Kimberly-Clark Canada Staff Changes

James Loynd, paper mill project engineer, Spruce Falls Power & Paper Co., Kapuskasing, Ont., has been transferred to the engineering staff of Kimberly-Clark at Neenah. Hugh Sleeves, maintenance engineer at Kimberly-Clark of Canada, Kapuskasing, has been transferred to the Canadian Company's Niagara Falls, Ont. converting plant in the same capacity.

John W. Holdsworth

Heads Westvaco Building Board Sales

West Virginia Pulp and Paper Co. has appointed John W. Holdsworth sales manager for its newly created Building Board Division. The appointment follows a recent Westvaco announcement of the intention to construct a flakeboard mill at the site of its Tyrone, Pa. plant.

Mr. Holdsworth had formerly served with Masonite Corp. as a division manager and with Armstrong Cork Co. in the field of building product sales.

Mr. Holdsworth will organize a sales force with headquarters at Tyrone for the purpose of marketing Westvaco's projected flakeboard product, which will be on the market next year. Flakeboard is now used in the construction, furniture, and other manufacturing industries.

Sidney Frohman

Hinde & Dauch Chairman Retires

The dean of the corrugated box industry in America, 76-year-old Sidney Frohman, chairman of Hinde & Dauch Paper Co., was honored late last month by business associates for his contributions to the company and industry dating back nearly a half century.

Top executives and directors of West Virginia Pulp and Paper Co., which acquired the corrugated box manufacturing company as a subsidiary in 1953, as well as long-time associates in H&D and its Canadian subsidiary, paid tribute to Mr. Frohman. The occasion marked the close of his 47-year career as an active employee of H&D, as a result of the technical merger of H&D as a major operating division of the parent company, effective September 30.

Mr. Frohman's status in the company is changed from that of active employee to consultant, to conform with provisions of the parent company's retirement plan which limits active employee status to age 65. Mr. Frohman also will continue to serve on the board of directors of the parent company.

The man who led H&D in a steady expansion program which made it one of the leading manufacturers of corrugated boxes in the country, joined the company in 1910 as treasurer. He succeeded to the presidency in 1918, when J. J. Dauch, one of the founders, was killed in an automobile accident. Mr. Frohman became chairman of the board in 1951, and was succeeded in the presidency by his nephew, Charles E. Frohman.

It was under Sidney Frohman's leadership that H&D factories were located in or near major industrial centers. The greater access to markets provided by this move accounted for the steady growth which gave H&D 15 modern box plants throughout the East, Midwest and South.

Mr. Frohman also was instrumental in the growth of Hinde and Dauch Paper Co. of Canada, Ltd., the leading producer of corrugated containers in Canada, which now operates two mills and seven box plants from Montreal to Calgary. Mr. Frohman is chairman of the board and a director of the subsidiary.

Through the years Mr. Frohman has been one of the most influential and respected figures in the paperboard industry, serving as president of the National Paperboard Assn. a number of times.

In recognition of his contributions to business, he holds an honorary degree of Doctor of Business Administration from Bowling Green University, conferred in 1948.

A native of Sandusky, Mr. Frohman attended Sandusky high school and Sandusky Business College. As a young man Mr. Frohman worked for the Peoples Electric Railway as an office boy, then as a motorman, operating an interurban street car between Sandusky, Vermilion and Norwalk, Ohio. Later he became freight agent for the Sandusky, Milan and Norwalk Electric Railway, then secretary to the general manager of the Lake Shore Electric Railway. Subsequently he worked as a salesman for the Sandusky Foundry & Machine Co., selling equipment to paper mills.

K-C Employees Transfered

Two employees of the Niagara Falls N. Y. Kimberly-Clark plant have been assigned to the company's new plant at New Milford, Conn.

Leo C. Moersen, senior methods analyst, has been assigned as the mill industrial engineer at the New Milford mill. Carey A. Sutfin, assistant production superintendent, will become operating supervisor at New Milford.

McGregor to Crandon

G. H. McGregor, well known pulping authority, has accepted a position as general manager of Crandon Paper Mills, Inc., Fort Madison, Iowa. Mr. McGregor has had broad experience in pulp and paper manufacture, and is well known about the industry. He replaces George Copeland who has been employed as general manager of the Crandon mill and is now leaving to assume a position with Nashwaak Power & Chemical Corp. of New York City.

Buckeye has perfect control

from pulpwood to wood pulp

From forest to finished product, every step in the manufacture of Buckeye Pulp is engineered and controlled to the Nth degree. Our 800,000 acre tree farm in Florida is carefully supervised, harvested and replanted with superior seedlings. At the huge Buckeye plant, custom-designed equipment and advanced processes convert selected logs into wood pulp to meet the most exacting standards of quality and uniformity. Every stage of production is constantly checked and double-checked by a rigid system of plant and laboratory controls.

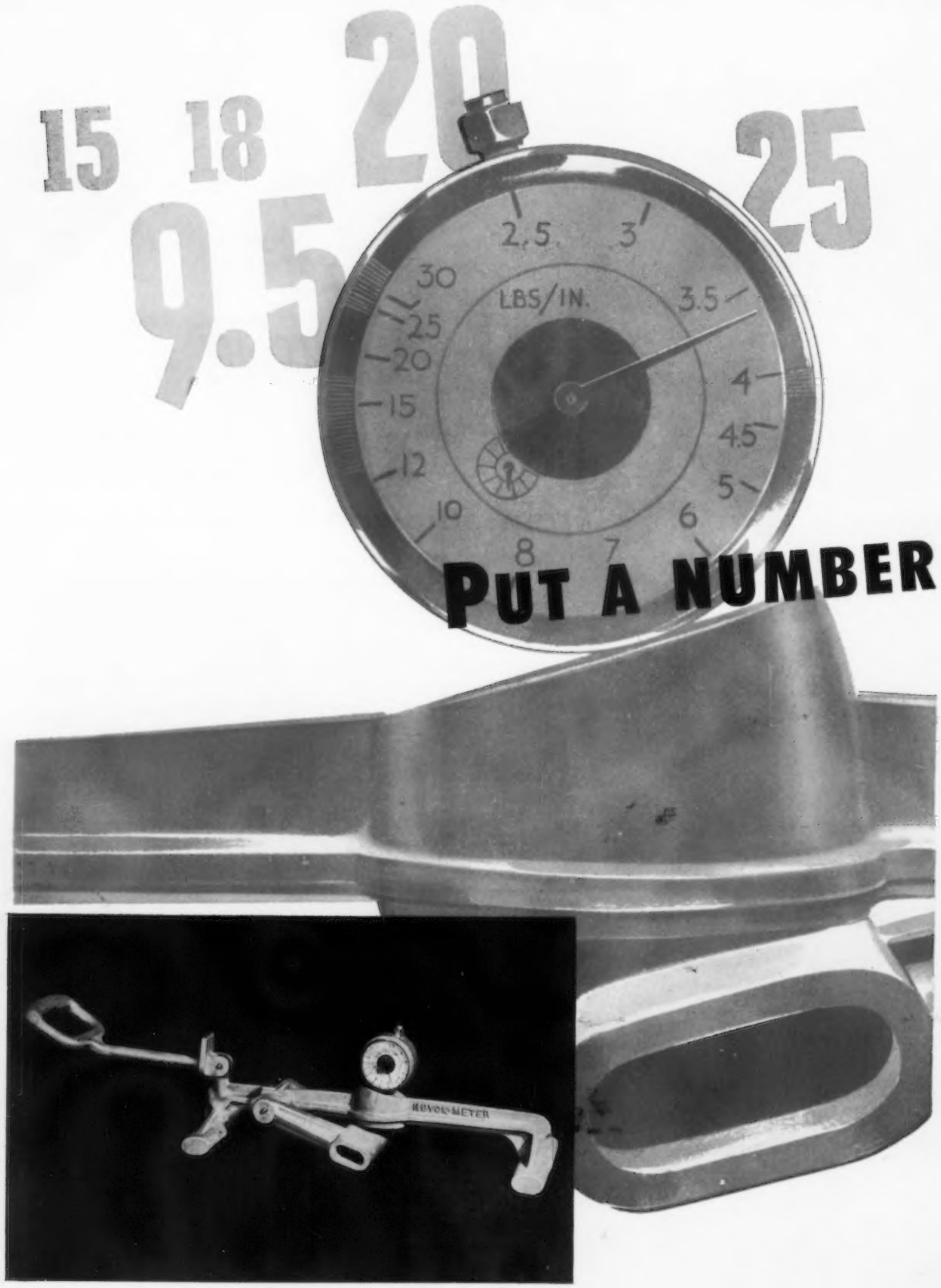
Visitors to our Foley plant are amazed at all that is done to make sure of complete customer satisfaction. It can pay you to discuss your requirements for bleached or semi-bleached kraft with us. Address inquiries to:

BUCKEYE CELLULOSE CORPORATION, Memphis 8, Tenn.

Wood Pulp Plant at Foley, Florida
Cotton Linters Pulp Plant
at Memphis, Tennessee

BUCKEYE PULP

Bleached and Semi-Bleached Kraft
from Southern Pine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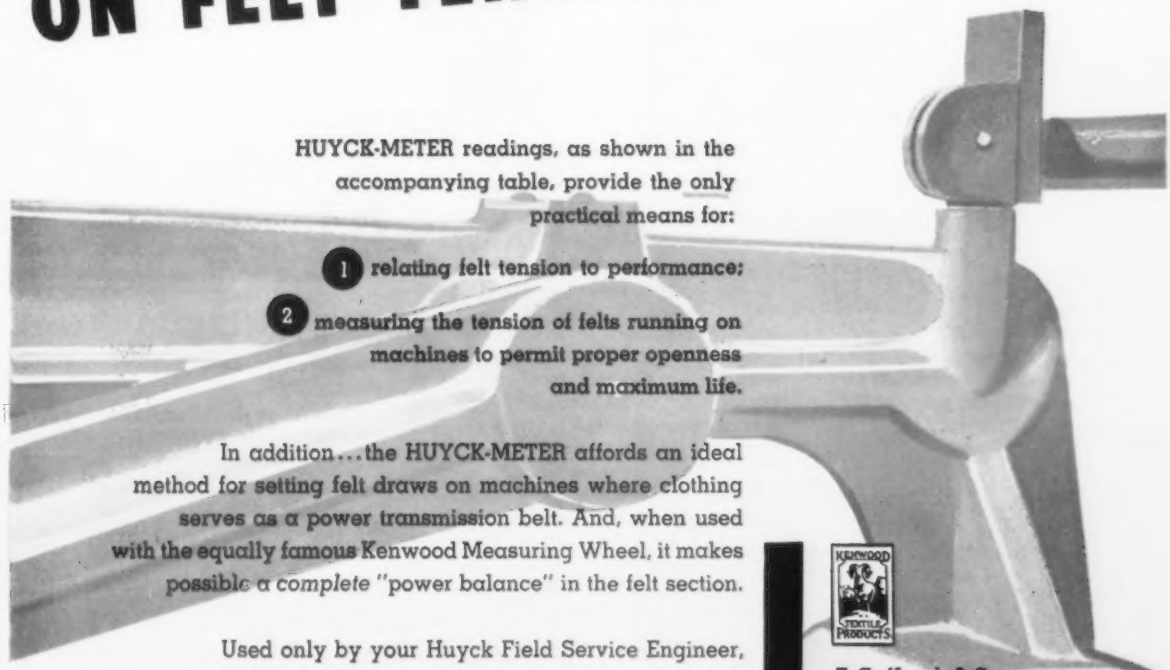
PUT A NUMBER
REVOLMETER

HUYCK-METER relates felt tension to Performance

CASE HISTORIES	TYPE OF MACHINE	SPEED	PRODUCT	HUYCK-METER READING AT JACK	FELT PERFORMANCE
Mill "A"	Multi-Cylinder	300 f.p.m.	Folding Grade	12 to 15 lbs. per inch	No stretching, dropoffs, cylinder blows, crushing or checking.
Mill "B"	Multi-Cylinder	300 f.p.m.	Folding Grade	30 lbs. per inch and Over	Life very short—10 days and under. Stretching, edge cracks and warp breaks.

30 ON FELT TENSION



HUYCK-METER readings, as shown in the accompanying table, provide the only practical means for:

1 relating felt tension to performance;

2 measuring the tension of felts running on machines to permit proper openness and maximum life.

In addition...the HUYCK-METER affords an ideal method for setting felt draws on machines where clothing serves as a power transmission belt. And, when used with the equally famous Kenwood Measuring Wheel, it makes possible a *complete* "power balance" in the felt section.

Used only by your Huyck Field Service Engineer, the HUYCK-METER enables the accumulation of data that helps you increase production...improve paper quality ...and lower cost. Plan for a "mill survey" now.

KENWOOD TEXTILE PRODUCTS

F. C. Huyck & Sons,
Rensselaer, N. Y.;
Alicevilla, Ala.;
Peterborough, N. H.;
Cavendish, Vt.;
In Canada: Kenwood Mills Ltd., Arnprior, Ontario.

HUYCK FELTS ★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

New Machine Adds Flexibility at Crystal Tissue

CRYSTAL TISSUE OFFICIALS examine first samples of paper made by new machine. Left to right standing, Stanley H. Reed, vice president in charge of sales; L. J. Long, vice president; and H. H. Harrison, vice president in charge of manufacturing and general superintendent. Sitting at desk: E. E. Grant, president.

Addition of a machine with Yankee and conventional driers permits Crystal to widen its range of tissue specialties.

Crystal Tissue Co., Middletown, Ohio, recently started up a new, very flexible specialty tissue machine. The 134-inch new Black-Clawson machine replaces an older 100-inch trim machine and increases the mill's production by 25 per cent. Crystal concentrates on wrapping, industrial and specialty tissues and does not manufacture sanitary tissues such as toilet paper, facial tissue, etc.

Machine Details

The machine has a stainless steel modern open-type headbox and slice. The fourdrinier is designed for shaking with a single shake unit attached to the breast roll. The flat wire is 64 feet long and has a combination of rubber-covered and dandy type (wire-covered) table rolls, and four suction boxes. The couch roll is grooved. The sheet is removed from the couch by a pickup felt. Nip pressure at the couch is regulated by a pneumatically controlled top couch roll. The pickup felt carries the sheet through the suction press to the point of transfer onto the 36-inch diameter lead-on-drier. The single main press consists of a rubber covered top roll. Following the lead-on drier are five 48-inch pre-driers and a felt drier. Next in position is the Yankee drier, followed by five 48-inch after driers. Provision has been made to permit by-passing of the Yankee drier, thus providing added flexibility to the machine's operation.

The Yankee drier roll, 12 feet in diameter by 140-inch face, operates at pressure up to 12 p.s.i. It is equipped with a rubber-covered pressure roll and is driven through the General Electric sectional electric drive as are the other paper machine components. The drier section is covered by a Ross hood and completely equipped with carrier (backtender) ropes.

Rewinding and Slitting

Completing the dry end of the paper machine are a five-roll calender stack, a uniform speed Autoflyte 56 automatic reel and a Black-Clawson slitter-rewinder with 50-inch maximum rewinding capacity. The slitter-rewinder operates at speeds up to 3000 feet per minute.

A hydraulic unload platform at the slitter-rewinder facilitates safe unloading of the finished rolls of tissue which are immediately delivered to the finishing room, waxing department or to the printing department for conversion.

Stock Preparation

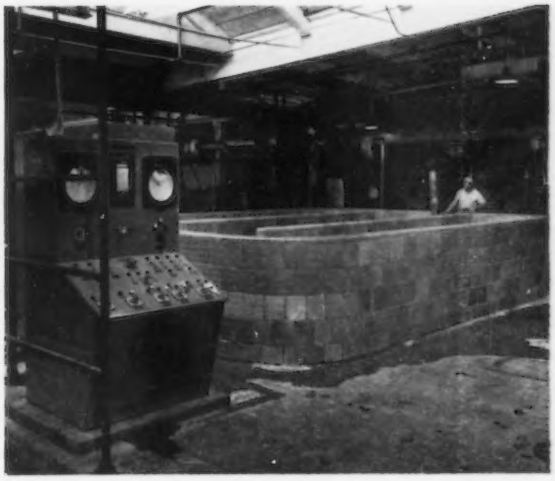
The stock preparation, completed earlier, supplies all the paper machines and uses a Hydrapulper, jordans and refiners in a Duo-cycling refining system. The new machine has a 5000-lb., tile-lined, propellor-agitated machine chest.

In order to fit the expanded facilities into the existing plant, Crystal built two large penthouses over the stock preparation room. One penthouse contains the electrical control center and the other the air supply system for the drier section.

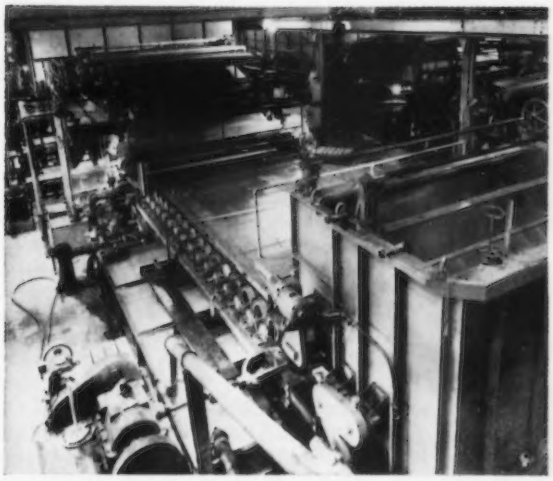
Other Machines

In addition to this new machine, Crystal has two 120-inch trim single-cylinder machines with regular driers and one 120-inch trim fourdrinier with regular driers. The new machine with its Yankee drier now permits the company to make machine glazed grades. Among the types of tissue produced by Crystal are: wrapping, twisting, anti-tarnish, alkali proof, tea bag, waxing, butter wraps and special industrial and technical tissues. Also the company has a converting department where printing and waxing are done.

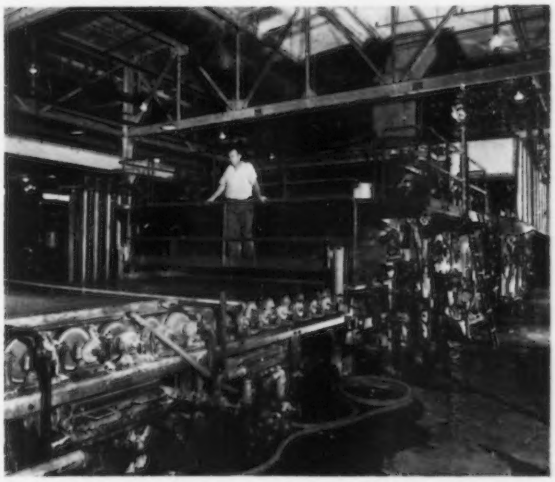
TILE-LINED CHESTS are a feature of the new stock system.



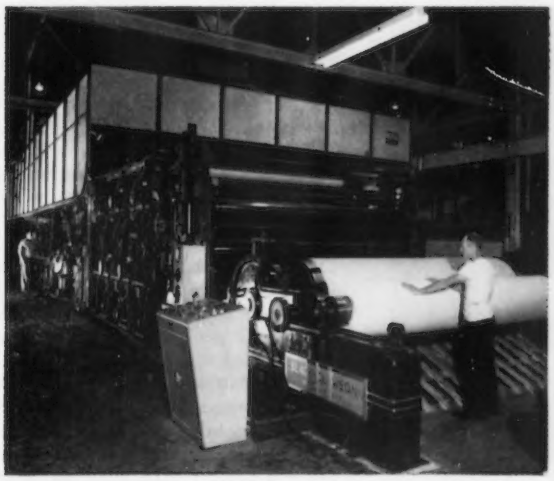
BEATER CHEST is tile-lined and has propeller agitation.



OPEN HEADBOX CONSTRUCTION dominates this wet end view.



COUCH PICK-UP ARRANGEMENT and single main press.



DRIER SECTION (Yankee not visible) and reel are seen here.

MOTOR GENERATOR SETS and master controls for machine drive.

Engineers Discuss Drying, Economics, Water Treatment, Other Problems

E. F. Barker
Field Editor
Paper Trade Journal

The twelfth TAPPI Engineering Conference held in Cincinnati last week was widely attended by mill men and supplier firms. Registration may be broken down approximately as follows: mill men 250, suppliers 500, miscellaneous 20 and ladies 106. Although the registration was down 75 from last year, this year's meeting was generally held to be one of the most successful. During the four-day conference there were: 11 committee meetings, 14 conference sessions at which 27 technical papers were presented, 12 informal discussion meetings, and a number of tours to paper mills and suppliers' plants.

Officers

Twelfth TAPPI Engineering Conference officers were: G. B. Gregg, Cincinnati Gas and Electric Co., chairman; E. W. Prince, Champion Paper and Fibre Co., Hamilton, secretary; D. C. Meyer, Gardner Board & Carton Co., Middletown, treasurer; Marshall Barker, Beckett Paper Co., Hamilton; and B. L. Merriss, Oxford Miami Paper Co., West Carrollton, chairman and assistant chairman, respectively for hospitality; Virgil Perry, Harding-Jones Paper Co., Excello, chairman, plant tours; Walter H. Hall, Mead Corp., Chillicothe, chairman, printing; J. M. Popp, General Electric Co., Cincinnati, chairman, program; Hayden Taylor, Black-Clawson, Shartle Division, Middletown, chairman, publicity; and L. R. Clark, Link Belt Co., Cincinnati, chairman, registration. J. D. Lyall, Armstrong Cork Co., Lancaster, Pa., was general chairman of the TAPPI Engineering Division. J. R. Curtis, Scott Paper Co., Chester, Pa., served as vice chairman; and H. O. Teeple, International Nickel Co., New York, N. Y., served as general secretary.

Conference Highlights

Conference highlights included a number of excellent papers delivered and a very entertaining and rather thought-provoking banquet address by the Hon. Judge James G. Stewart, of the Ohio State Supreme Court and a former mayor of Cincinnati.

Although the Engineering Conference, in contrast to many other TAPPI conferences, does not operate with a central theme, there appeared to be a number of unofficial themes, as reflected by the discussions in the crowded halls and the smoke-filled hotel rooms. Air and stream pollution again was a subject of major discussion among the conferees and a display of a horizontal size press in the Patton Manufacturing Co. hospitality room drew a large number of visitors and comments.

Among the most noteworthy papers presented at the conference, one given by H. B. Shepard, of Edwards, Kelcey & Beck, of Boston, aroused considerable interest. Other particularly interesting papers, some of which are treated in detail below, included "Development of Improved Process Water at Oxford," by S. R. Cooper and A. H. Tifft; "Water and an Example of the Economics of Handling Paper Machine Effluent," by F. C. Holmes, Bird Machine Co.; "The Cross Directional Uniformity of Drying on a Paper Machine," by John Verwayen, Gibralter Corrugated Co.; "Bulk Paper Handling at Crown Zellerbach," by Frederick D. Helversen, Crown Zellerbach (Described in detail in the January 28, 1957 issue of *Paper Trade JOURNAL*); and "Noise Abatement," by a panel consisting of M. H. Davis, Kimberly-Clark, chairman; and D. L. Shinn, of Crown Zellerbach; and E. J. Justus, of Beloit Iron Works.

To the practical paper maker the drying session, which included the presentation of four papers, ranked high in interest. (Some details of this session are also given below in this report). Another highlight of the conference came during the official luncheon when J. R. Curtis of Scott Paper Co., incoming chairman of the TAPPI Engineering Division, presented a testimonial of appreciation to John D. Lyall, outgoing general chairman of the division.

Drying Session

That paper makers are aware that much work needs yet to be done on the technical control of drying on the paper machine was obvious by the heavy attendance in the third technical session, devoted to drying. E. H. Olmstead, of Eaton-Dikeman Co., served as chairman. Papers presented were: "Cross-directional Uniformity of Drying on a Paper Machine," by John Verwayen, Gibraltar Corrugated; "Heat Transfer in Hot Surface Drying," by S. T. Han, Beloit Iron Works, and Tapio Ulmanen, Institute of Paper Chemistry; "Effect of Fluid Properties on Condensate Behavior," by E. E. White, Villanova University, Villanova, Pa.; and "Modern Coated Book Machine Enclosed Hood Operation," by H. L. Slight, Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.

In his paper on "Cross-directional Uniformity of Drying on a Paper Machine" Mr. Verwayen developed the following points. In modern paper making we are able to control a majority of variables in the beater room and on the wet end of the machine. Thus, in the beater room we control the furnish, chemicals, consistency and freeness. On the wet end we have controls to form a sheet of uniform caliber. In the press section we have a certain amount of control for water removal in order to obtain uniform moisture content across the sheet. However, when we come to the dryer section, we have relatively little control and there is nothing that we can adjust to compensate for the moisture variation of the entering sheet. A sheet that enters with uniform moisture across the width will be subjected

to non-uniform drying. As a rule the edges dry faster than the center. The air which is exhausted through the hood exhaust fans, passes along the edges and therefore the edges dry much faster than the center. Totally enclosed hoods were introduced to overcome this air infiltration along the edges. Vapor absorption systems will improve non-uniform drying to a certain extent. However, we still don't have any control to compensate for non-uniform drying across the sheet.

Mr. Verwayen then posed the following questions: "What do we do then to perform a good drying job on our machine?" He answered the question himself with: "We don't do a good job. All the operator can do, with the equipment now available to him, is to overdry. This is what the practice, of using the last 10 to 25 per cent of the dryers for drying up the center of the sheet, is called." As an example of overdrying the following was given: the edges of the sheet are 95 per cent dry at 75 to 80 per cent of travel through the dryer section, while the center of the sheet still contains 30 per cent moisture. Drying then continues until the center has 5 per cent moisture. The edges will then have about 3 per cent moisture. Water may then be added to the sheet at the calender stack to even out the moisture across the sheet to about 6 per cent. This wasteful practice, it was pointed out, costs our industry millions of dollars yearly in extra steam consumption and extra equipment investment.

Mr. Verwayen then gave a progress report of work done at Gibraltar which involved first sampling sheets in various positions in the dryer section for moisture content checks. It was found that moisture of the sheet in the first press was uniform across the sheet at 70 per cent. However, in the fourth draw, moisture varied as much as 20 per cent from the edges of the sheet (10%) to the center (30%). The machine in question has a standard hood with an eight-foot apron and the first 65 dryers are equipped with a vapor absorption system. Eighteen of the 91 dryers were used for over-drying when this work began.

Experimental work at Gilbraltar included some of the following attempts: (1) Wrapping the vapor absorption nozzle headers with apron cloth at the ends. This did not accomplish much. (2) A totally enclosed head was improvised by closing off the open spaces between the hood aprons and the floor with old felt. This too did not produce noticeable improvement. (3) Vapor absorption nozzle headers with plugged nozzles, equipped with a rectangular slot in the center was tried next. Because the headers was supplied from the drive side

ENGINEERING CONFERENCE OFFICIALS: J. D. Lyall, Armstrong Cork; Phil Nethercut, TAPPI; K. O. Elderkin, Bowaters; Ward D. Harrison, Riegel; John Curtis, Scott; H. O. Teeple, International Nickel.

INDUSTRIAL ENGINEERING & MATERIAL HANDLING PANEL: Fred D. Helverson, Crown Zellerbach; John M. MacBrayne, Union Bag-Camp, chairman; H. A. Stoess Jr., Fuller Co.

RINGING BELL called conference participants to each session. Left to right are Frank Duvall, Black-Clawson; B. L. Merriss, Oxford Miami; Marshall Barker, Beckett; Vance Edwards, TAPPI; Norman Heberer, Champion Paper.

all the air blew out of the slot toward the tending side of the machine and this, therefore, was also a failure. (4) The next attempt was equipping 40 nozzle headers with slots. Fins were soldered into the slot so that the air would blow perpendicular to the dryer surface. This worked well, so well that the machine began to dry the center too much, winding up with wet edges.

Continued experimentation along this method appears to prove, according to Mr. Verwayen, that it is possible to control the moisture content across the sheet. Work is continuing on this and Gibraltar expects to make a report of its work in the near future.

In contrast with the purely practical aspects of the first paper in the drying session, Robert E. White and Thomas W. Higgins, of Villanova University, Villanova, Pa., presented a technical paper of the "Effect of Fluid Properties on Condensate Behavior." They reported that a correlation has been developed from which the critical rimming speed may be predicted from a knowledge of the quantity, viscosity and density of the condensate and the dryer diameter. Data for drums varying from two inches to five ft. in diameter and for a wide range of fluid properties fall within about plus or minus five per cent of the values predicted by the correlation. This work was principally experimental, and is therefore somewhat outside the scope of this report.

In the last paper of the drying session Richard L. Seight, Consolidated Water Power and Paper, reported on a new high-speed book machine which employs on-the-machine coating. This machine is equipped with an enclosed hood and air system installation. The paper operational data representing drying experience together with a discussion of the functional aspects of the equipment.

Noise Abatement

A round table discussion on paper mill noise abatement came in for considerable interest, E. J. Justus of Beloit, led the discussion.

The panel reviewed the historical aspect of the problem of noise in paper mills, which has always been a matter of concern but still remains one of the more neglected aspects of pulp and paper mill engineering. Mr. Myrl Davis of Kimberly-Clark, reported that in 1932 his company began to investigate the most objectionable noises eminating from the stock preparation and paper machine areas, that from jordans and suction rolls. In 1938 they began to work with sound proofing materials and started experiments on how to silence suction rolls.

The panel reviewed the basic aspects of measuring sound, giving the conferees a quick lesson in the sound of physics, including how noise is measured by measuring the distance between normal atmospheric pressure and sound pressure.

Here are a few highlights of the noise abatement discussion: If you have a number of noise sources, cutting a few will do little good. However, the reduction of the noisiest (determined easily with a sound level recorder) will help a great deal in overall room noise. It has been found that overall noise frequency is not as bad as one steady unvarying frequency. In silencing work, little needs to be considered above the 10,000 frequency, but there still exists a great deal of uncertainty in the field of ear damage caused by noise. As frequency lowers, the ear can stand higher decibels of sound (noise level).

Silencing work is now going on and Mr. Justus of Beloit reported some of the work being done by his company in this line, and a special silencing mechanism has been developed.

Economies

That the day of the paper technologist who confines his efforts and interests solely to the slide rule and the test tube have gone forever was again proven rather conclusively when the Engineering Conference delved into the economics of pulp and paper making. Here it was made clear that the modern engineer and technician in the paper industry is very much a member of the management team and that he is cognizant of the economic aspects of his work. In a paper entitled "What to do Until the Economist Comes," H. B. Shepard of Edwards, Kelcey & Beck tackled the subject by discussing some of the fundamental aspects of economics. Mr. Shepard called the dollar a "lousy unit of measurement in economics," but a unit with which economists, engineers and businessmen are, unfortunately, "stuck."

Defining one of the most frequently used expression in economics, the "cost benefit ratio" the speaker said: "The ratio of cost to benefit is not, of course, likely to be too low but it can easily be too high. Devices are economic successes if their ratio of cost to benefit are low. They are failures if the cost is too high in relation to the benefit. The strengthening of our economy and the advance of our standard of living are inseparably tied to our unending search for devices with low and still lower ratios of costs to benefits." This means that we are continually striving to achieve the technological advance and higher labor productivity that are associated with devices with decreasing ratios of cost to benefit.

There are many ways in which economic considerations affect business management but they are all related to a single question—will it pay? One definition of an economist presented in this session was: "An economist is one versed in economical management and the effective use of money, material, labor and time. By this definition the paper mill engineer is very much an economist also."

White Water Handling

F. C. Holmes, Bird Machine Co., then delved into the economics of handling paper machine effluents in which he discussed a typical example of the economical aspects of installing a white water system to reclaim mill effluent. He discussed the economics of water and pointed out that man now uses about five per cent of all the water that falls from the skies. "Water is now a matter of top economic policy," the speaker said. Giving dollar figures of an actual case study involving the purchase of new equipment and the estimated annual savings, Mr. Holmes showed how the engineer is required to calculate how long equipment which he proposes for installation will take to pay for itself. In the example cited two factors were drawn into a basic calculation which shows how long equipment will require until it pays for itself. In installing a saveall and slime removal equipment, the mill spent $51,-280. Total annual recovery of effluent materials was shown to be $12,813 as a result of installing the new equipment. By dividing the two figures, Mr. Holmes said, we get a 25 per cent rate of recovery, or: "The equipment will pay for itself in four years." This, he pointed out, is a typical example of economics and how it affects the pulp and paper mill engineer.

Motor Failures

E. F. Greiwe of the Allis-Chalmers Manufacturing Co., Norwood, Ohio, discussed failures of electric motors that result from the drives or conditions of the drive. Some of the highlights of this paper included the following considerations: (1) Flexible couplings can usually withstand some amount of misalignment, either angular or parallel or both. (2) Careful alignment precaution must be taken on large high-speed units, such as larger boiler feed pumps. Following the initial alignment at wrong temperature, the unit should be run and the coupling halves realigned when the motor and the driven unit have been brought up to their operating temperature. (3) Coupling halves may become misaligned even though a nearly perfect job was performed originally. One of the common causes of this is pipe strain

Displays in Suppliers' Hospitality Rooms Drew Visitors

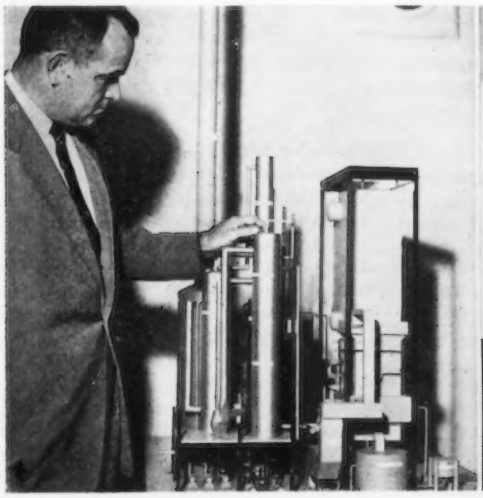
ABOVE: Patton Manufacturing shows horizontal size press. Left to right are Wayne Crannell, Patton sales manager; George S. Hervert, Patton president; Warren Hendricks and M. S. Jones, both of Mead Corp.'s Chillicothe Division.

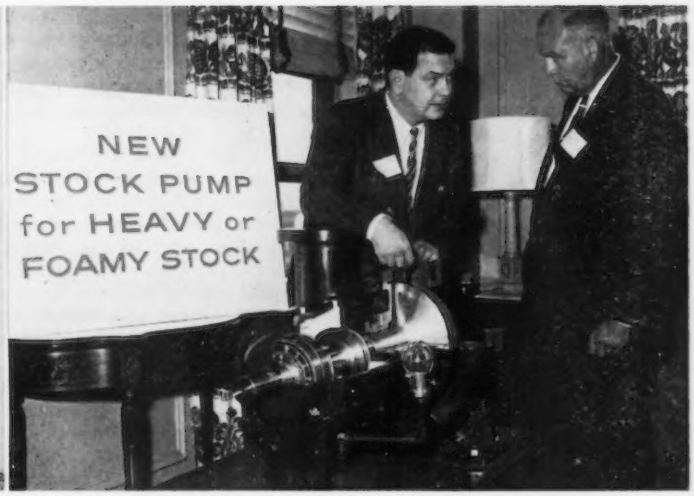
ABOVE RIGHT: Charles R. Stevens, Inc. shows pilot model of its continuous roll stand. Charles R. Stevens (left) is here with John S. Mudgett, Strathmore Paper Co.

AT RIGHT: Allis-Chalmers shows its new Acap pump, a variable volume fan pump. Left to right are Lawrence W. Porter, St. Joe Paper Co.; T. E. Digby, Container Corp.; Bert C. Gaillard, St. Joe Paper Co., and Frank R. Forrest, Allis-Chalmers.

BELOW: Babcock & Wilcox's W. J. Darmstadt shows much-discussed model of 250-ton-per-day heat and chemical recovery unit for neutral sulphite semi-chemical waste liquor.

BELOW RIGHT: Ingersoll-Rand's new centrifugal pump for liquids containing solids, air or gases is shown by Francis B. Northrop here with Bob Easterly of Ebasco Services.





BANQUET SPEAKER JUDGE J. G. STEWART

"For two centuries we have been isolationists . . . "Take Washington's Farewell Address . . . "A great document . . . "Written by Alexander Hamilton . . . "Proves the point."

on the pump casing due to inadequate pump support, sagging structures, contraction or elongation of pipe due to temperature changes. (4) Shifting of the motor or the driven unit on its base plate may cause misalignment and may occur if either or both of the two units were not doweled to the base plate. (5) Careful observation for vibration which may be an indicational coupling misalignment is a possible cure of these causes of motor failure. (6) The bearings of large sleeve bearing machines must be protected from any thrust which has its source external to the motor. (7) Operating experience on horizontal sleeve bearing motors has shown that sufficient thrust to damage bearings may be transmitted to the motor through a flexible coupling.

Process Water At Oxford

Austin H. Tifft, Oxford Paper Co., Rumford, Maine, gave a case history discussion of how improved process water was developed at Oxford. He pointed out that although Oxford's specific water problem is not identical to any other mills' problem in its entirety, the solution to certain phases of the problem are of interest to mills faced with problems of a similar nature.

During the early years Oxford found ample water available from the Androsgoggin River. However, as paper quality levels gradually rose it became imperative to secure a higher quality process water. A full investigation was undertaken in 1953. Ground and surface water availability was studied. Tests showed that Swift River water could be easily coagulated in a convential manner. After studies in a pilot plant a full scale plant was designed. The plant consists of separate intake stations on the Swift and Androsgoggin rivers, two coagulators with automatic chemical preparation and metering equipment, six gravity sand filters, a large clear well and a new distribution system to the mill.

The control of raw water to the coagulators is designed to take Swift River water preferentially and to balance the mill demand with water from the Androsgoggin. Since each river water requires a different chemical treatment, the correct total chemical addition required for the mixture changes as the ratio of the two river waters change. This problem was solved by the use of two complete chemical feed systems one for each river water supply. Activated silica is prepared with chlorine as the activating chemical. The water in the clear well is chlorinated to produce a 0.3 ppm residual in the paper mill for slime control purposes. This full scale water treatment plant has been in operation at Oxford only for a short time. Oxford expects that the full scale plant will perform substantially the same as the pilot plant scale equipment.

Conference Banquet

The Engineering Division dinner, held on September 24, featured the Hon. Judge James G. Stewart, member of the Ohio Supreme Court and a former mayor of Cincinnati. G. B. Gregg, of Cincinnati Gas and Electric Co., served as toastmaster.

In his address, Judge Stewart gave a very entertaining talk which became a topic for discussion throughout the remainder of the conference. (*Paper Trade JOURNAL* presents a special photojournalism report in the accompanying photo series, showing the speaker as he gestered characteristically throughout his address). Space permits reproducing only a few quotations from his speech.

The judge had recently returned from an extensive tour of Europe and some of his remarks pertained to this tour. He said: "You can't win friends by giving them charity. People will take it but they won't be your friends if you look down your nose at them. We have made a lot of mistakes because we are so uninformed as a nation.

"For two centuries we were isolationists. Look at Washington's farewell address, written by Alexander Hamilton, but still pretty good (laughter). Then take the Monroe Doctrine, written by John Quincy Adams (laughter). Then we grew up to be the greatest nation in the world. No one has to prove it . . . we admit it (laughter). The development of the heavier than airplane by the Wright Brothers in Dayton spelled a definite end to American isolation. We cannot stay away from foreign relations now.

"We must realize that we in this country are all Americans. The last naturalized citizen has the same rights and standings as the one who arrived in those colonial days of our country. The only difference between them is that the recently naturalized citizen arrived on a later boat." (laughter).

Luncheon

The 12th Engineering Conference luncheon, held on September 25, featured G. W. E. Nicholson, president of the Tennessee River Paper and Pulp Co., a former president of National TAPPI.

The Lighter Side

The 12th Engineering Conference was not devoid of its lighter sides. One of the topics of humorous discussion was especially the fact that a ladies' tour on the Ohio River encountered periodic difficulties when the riverboat ran out of fuel, leaving the ladies' party stranded for a half an hour on the river. Rocking back forth, the boat began to approach the river bank which caused some consternation among the members of the party and considerable amusement afterwards throughout the entire conference.

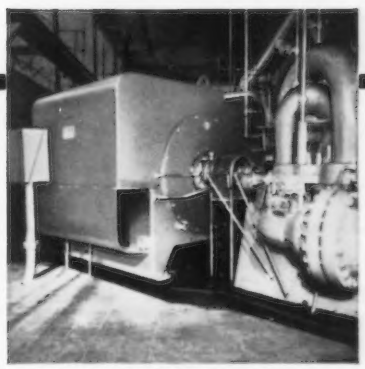
Fred Helversen, of Crown Zellerbach (see report of his paper above) created considerable and lasting amusement (reported here with his permission) when he addressed the conference. Speaking with an accent, Mr. Helversen pointed out that he finds it difficult to correctly pronounce the words "bulk pulp". He said: "When I say it it sounds like 'blub-blub.'" He then strode to the blackboard and wrote the words BULK PULP. After that he announced: "When you hear me say BLUB-BLUB I am speaking of BULK PULP. And when you hear me say BLUB I am speaking of PULP."

One of many reasons why **ALLIS-CHALMERS MOTORS** are preferred for outdoor applications in the

PAPER INDUSTRY

Space Heater is weather protected

(and corrosion-proof!)



Weather protected motor drives centrifugal pump.

Weather-protected heaters are standard on Allis-Chalmers outdoor motors . . . prevent moisture condensation on motor parts during shutdown periods. These immersion-type heaters are not only water-proof, they are also stainless steel clad for resistance to corrosion.

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Heater terminal box mounts outside motor frame; heating element projects into motor enclosure. Open wiring inside motor is eliminated. Entire heating unit is easily removed for service or replacement.

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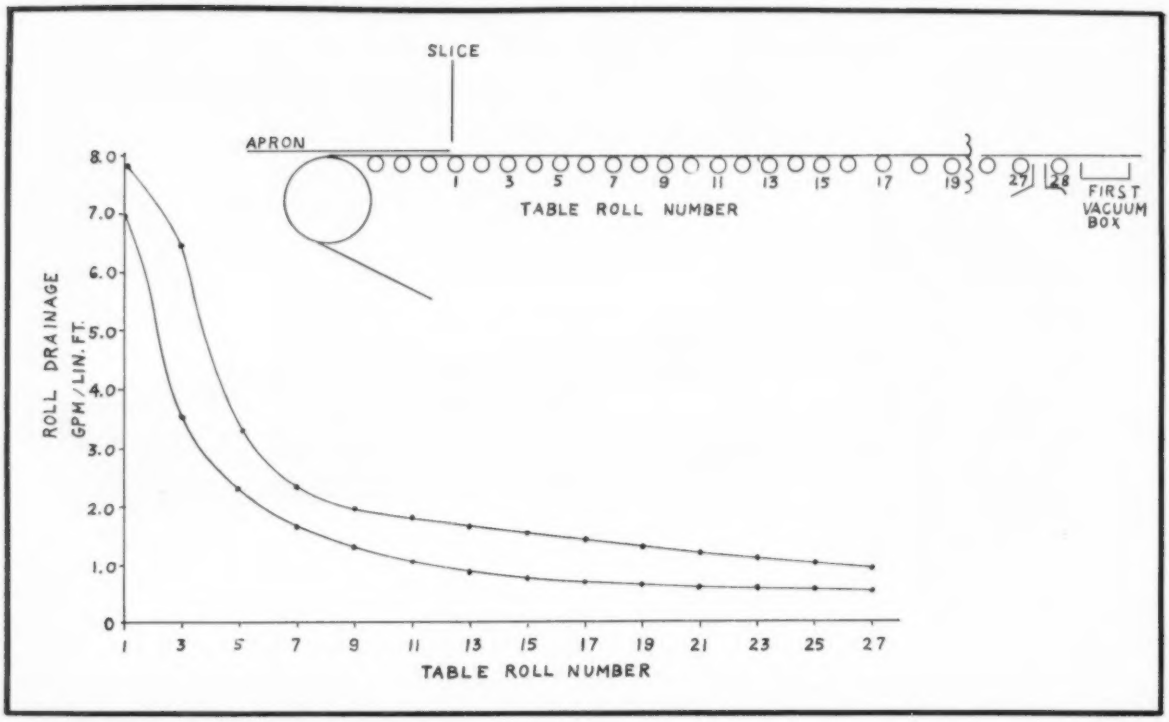


FIGURE 1—Typical wire drainage curves.

The Effects of Shake in Slow Speed Fourdrinier Operation

What the shake does to wire drainage and sheet strength with varying shake stroke and speed were investigated on a small fourdrinier. Here are the results.

R. G. Hitchings

Assistant Professor of Pulp and Paper Technology
North Carolina State College
Raleigh, North Carolina

The purpose of this investigation was to determine the effects of shake on the physical properties of the sheet and the white water drainage on a paper machine fourdrinier wet end. Although the differences in properties between the use of shake and no shake are readily discernible to the eye by examining the formation of a sheet, no information as to the narrower ranges of operation are available in the literature.

The present investigation was carried out on the 52-inch fourdrinier machine of the Pulp and Paper Department of the New York State College of Forestry. This machine is equipped with a Sandy Hill adjustable shake capable of a stroke length from 0-¾ of an inch and a speed range of 0-250 strokes per minute. These two adjustments are infinitely variable between the two sets of limits and may be made under operating conditions.

The test runs were carried out after the machine had been in operation for a minimum of two hours to insure a relatively stable condition in the closed white water system. The test conditions of the amplitude and shake speed were set up on the shake device, and, after a period of five minutes, the sheet was marked with colored dye on the first press. The next test condition was then adjusted on the shake device. After the reel was changed, the dried paper was rewound and samples across the reel were removed and conditioned according to TAPPI Standard Method T-402-M49.

During each test period, the drainage from four table rolls was obtained by catching the drainage from each roll in an 8-inch x 3-inch box equipped with a one-inch pipe placed midway across the machine. The flow from the pipe was measured by timing the flow into a graduated cylinder. The drainage was calculated as the gallons per minute per lineal foot of table roll, using the distance between deckle straps as the actual drainage width. The drainage rate was determined on the first, fifth, ninth, and seventeenth table rolls following the slice and apron. These particular rolls were selected because previous experience indicated that their drainage would express the character of wire

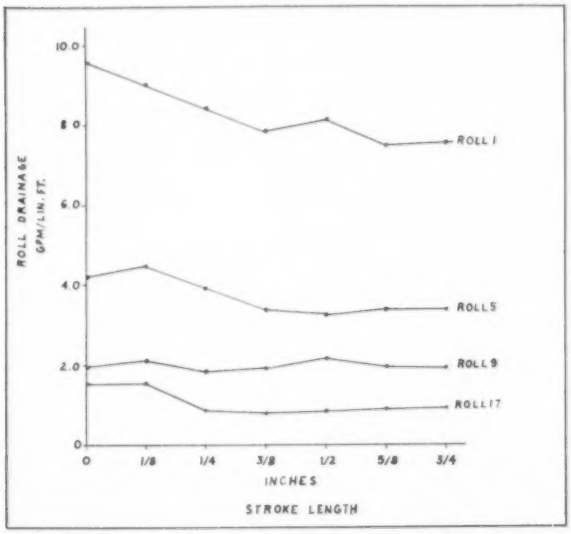


FIGURE 2—Effect of stroke length on roll drainage 20 SPM mimeo.

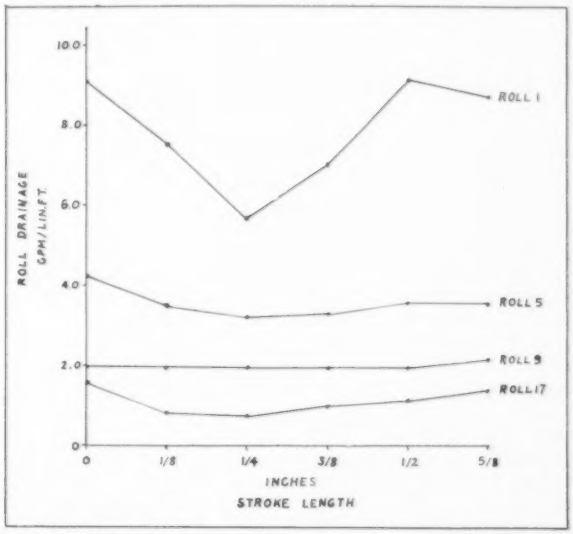


FIGURE 3—Effect of stroke length on roll drainage at 200 SPM mimeo.

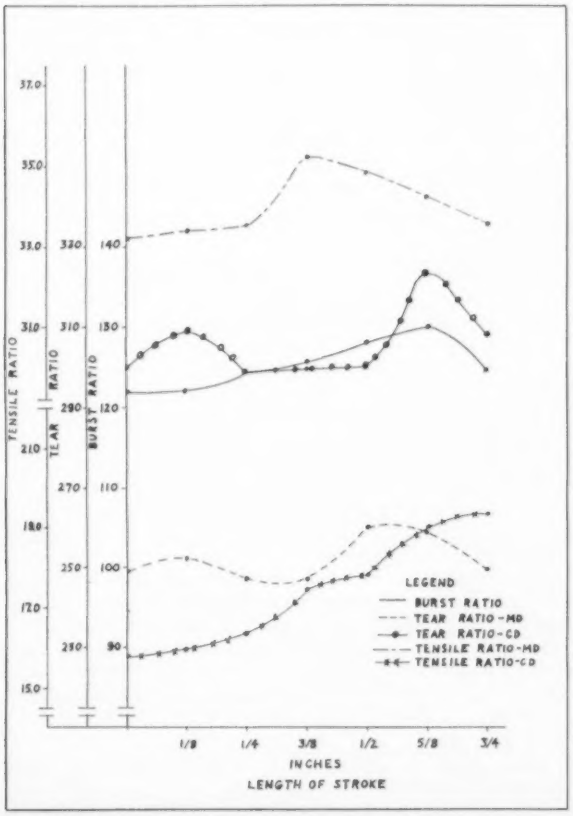


FIGURE 4—Effect of stroke length at 120 strokes per minute mimeo.

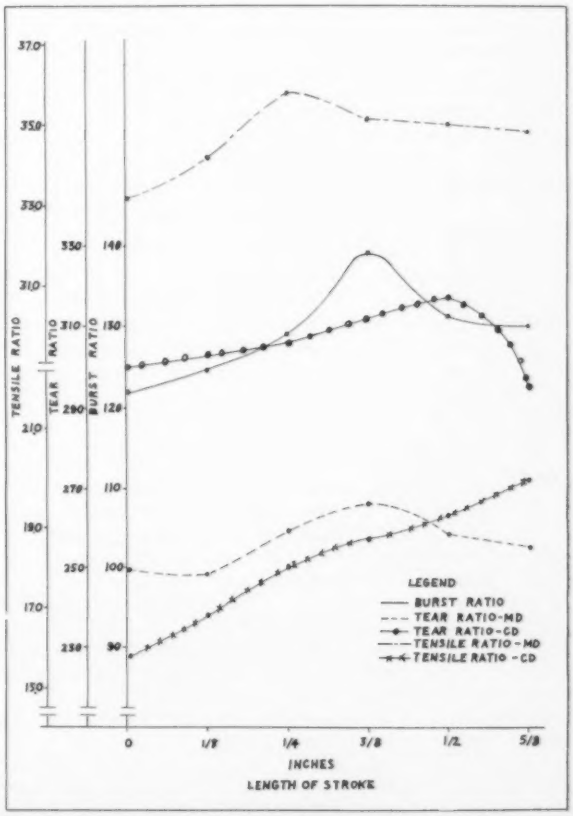


FIGURE 5—Effect of stroke length at 200 strokes per minute mimeo.

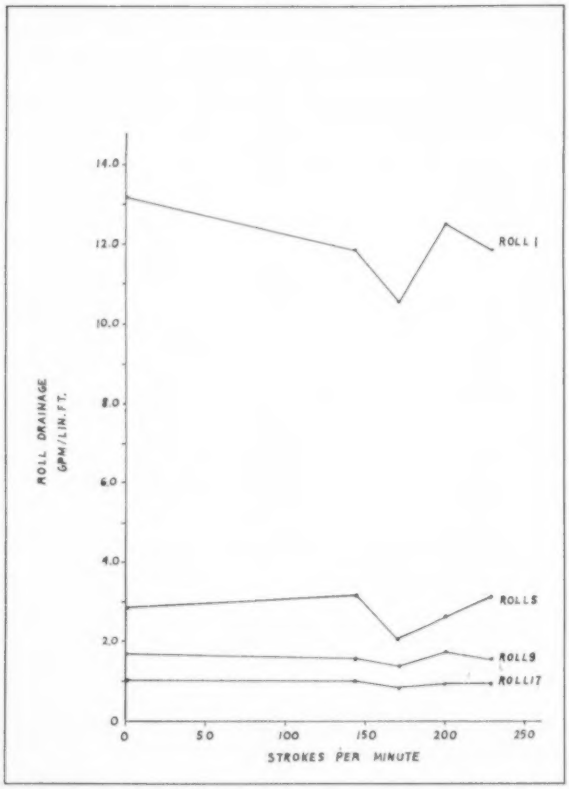


FIGURE 6—Effect of shake speed on roll drainage at 3/8 inch stroke bond.

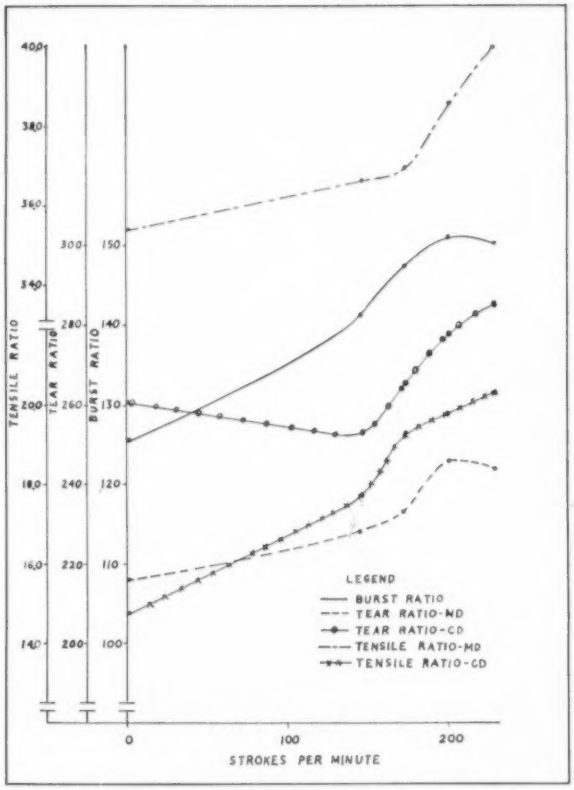


FIGURE 7—Effect of shake speed at 3/8 inch stroke.

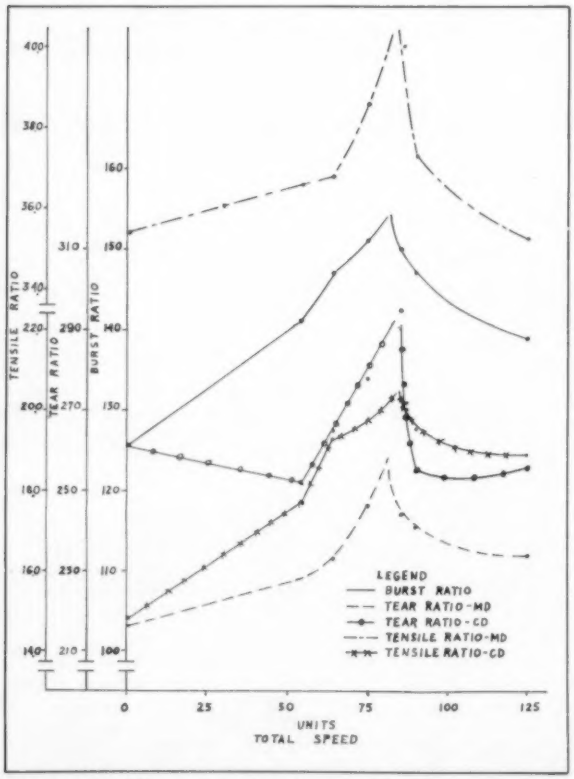


FIGURE 8—Effect of total shake speed bond.

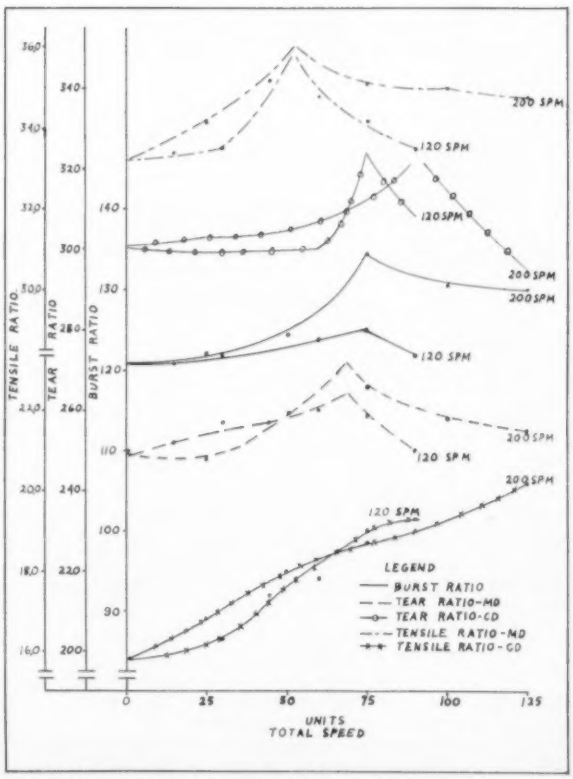


FIGURE 9—Effect of total shake speed mimeo.

drainage for this machine. (Figure 1).

The paper samples tested in this investigation were taken from the center of the sheet by cutting a series of 12-inch x 12-inch sheets from each test area. After the sheets were conditioned, they were subjected to the following tests:

	TAPPI Std. Method
Basis Weight	T-410M-35
Caliper	T-411M-44
Bursting Strength	T-403M-47
Tensile Strength	T-404M-47
Tearing Strength	T-414M-49
Percent Elongation at Rupture (Stretch)	T-457M-46
Air Resistance (Porosity)	T-460M-49

Upon completion of the paper testing, the burst ratio, tear ratio, and tensile ratio were calculated on a basis weight of 17-inch x 22-inch/500 ream.

Machine Operating Conditions

To investigate the effect of the shake length, the shake device was adjusted to give 0, 120, and 200 strokes per minute. At 120 strokes per minute, the stroke length was set at ⅛, ¼, ⅜, ½, ⅝, and ¾ inch. In the 200 strokes per minute range, the stroke length was adjusted to result in amplitudes of ⅛, ¼, ⅜, ½, and ⅝ inches.

This series of tests was performed on a mimeograph sheet composed of 60 per cent bleached sulphite pulp, 40 per cent bleached hardwood soda pulp, and one per cent titanium dioxide. The machine was operated at 234 feet per minute, and the freeness of the head box stock was determined to be 320 c.c. Canadian Standard. The stock passed on the wire at a consistency of 0.45 per cent.

Effect of Stroke Length

The results of the tube roll drainage appear in Table I, and in Figures 2 and 3.

The use of small-stroke lengths displays a marked effect on table roll drainage. This is particularly applicable of the first few rolls following the slice. At a stroke speed of 120 strokes per minute, the drainage from the table rolls demonstrated regularly decrease to a range of stroke lengths ⅜ inch to ⅝ inch. The latter range results in a minimum drainage rate from the wire.

The speed of 200 strokes per minute exhibits a somewhat greater effect on the drainage at various stroke lengths. The results indicate that a minimum drainage value is found at ¼-inch stroke length. The stroke lengths of ½ and ⅝ inch exhibit drainage rates that approximate those of no shake operation.

In general, the amplitude of the shake affects the drainage rates of the wire table rolls by reducing the rate as the stroke increases. The values pass through a minimum rate—and then increase as the length is further increased. At 200 strokes per minute, the minimum drainage value is found at a smaller stroke length than at the slower speed of 120 strokes per minute studied.

The effect of stroke length on physical properties of the finished sheet are presented in Table II and Figures 4 and 5.

The physical properties reflect variations in the changes of stroke length. The increase in stroke length tends to improve all the properties determined in this investigation. The various factors tend to pass through a maximum value and then decrease. At a stroke speed of 120, the porosity, burst ratio, tear ratio-cross direction, and tear ratio-machine direction exhibit the highest values at ⅝-inch stroke. The tensile ratio-machine direction and elongation at rupture demonstrate maximum values at slightly shorter stroke lengths. The tensile ratio in the cross direction tends to increase through the range of stroke length from 0 to ¾ inch.

The physical properties found at various stroke lengths during the period the shake was operated at 200 strokes per minute follow the same general trends as they exhibited at 120 strokes per minute. However, the majority of the physical tests proved highest at a stroke length of ⅜ inch, and their magnitude was slightly larger. In all properties except tear ratio in the cross direction, the decrease in value following the maximum values was not as great as in test carried out at 120 strokes per minute. The tensile ratio in the cross direction again increased throughout the entire range of stroke lengths examined.

Effect of Shake Speed

The effect of shake speed on drainage and physical properties was determined while the paper machine was operating at 235 feet per minute on a 100 per cent bleached sulphite furnish for bond paper. The average head box consistency in this case was 0.50 per cent and the head box stock freeness, 152 c.c. Canadian Standard. The shake device was adjusted to a ⅜-inch stroke length, and varied at the intervals of 0, 144, 172, 200, and 229 strokes per minute. Two additional tests were run at speeds of 144 and 200 strokes per minute with the shake length adjusted to ⅝ inch.

In Table III and in Figure 6, the effect of shake speed on tube roll drainage is presented.

An increase in the speed of the shake resulted in a decrease in the tube roll drainage until 172 strokes per minute were reached. A further increase in the speed tended to increase the drainage rate again. In both the investigation of the effect of stroke length and of stroke speed, the maximum values of each series of tests represented safe operating conditions as judged by the operators. Thus, in the ranges of these tests, the drainage characteristics pass through a point of minimum drainage.

The effect of shake speed on the physical properties of the paper is presented in Figure 7 and in Table IV.

The increase in shake speed at ⅜-inch stroke length improved all of the physical characteristics measured, except the tear ratio in the cross direction at 144 strokes per minute. The burst ratio, tear ratio in the machine direction, and stretch in the machine direction increase up to 200 strokes per minute, and a further increase of speed showed a slight decrease of these properties. The other strength properties tended to increase to the limit of the range of speed under consideration, however, in some instances at a decreasing rate of improvement.

Comparing the physical properties at the ⅝-inch stroke length indicated that the maximum strength and porosity values were obtained at a speed of 144 strokes per minute. At 200 strokes per minute, the paper tests showed a decrease in all properties; and, in certain properties, the improvement of strength over operation without the use of the shake was small.

As in the case of shake amplitude, the increase in speed of the shake causes the drainage rate from the table rolls to pass through a minimum quantity. The increasing speed likewise tends to cause the improvement of physical properties to an optimum point where further increases no longer improve the strength of the sheet.

In order to better understand the effect of the shake on paper properties, the so-called "total shake speed" was determined by multiplying the stroke length by the speed of the shake. Within the ranges studied in the tests, these energy values result in convenient units from 0 to 125. The strength properties of the bond sheet were then plotted against the "total speed" units on an appropriate scale (Figure 8).

The curves drawn through these points resulted in a plot that indicates the maximum strength properties for this sheet could be obtained by operating the shake at a "total speed" level of 82.

A similar set of curves were plotted for the mimeograph sheet (Figure 9). For the optimum strength properties, the "total speed" would fall at approximately 75 units. The curves of the various properties in this case do not "peak" at the same value. Considering that the stock furnish was composed of two dissimilar pulps, the point of optimum strength for each physical property will be affected to a degree that

TABLE II—EFFECT OF STROKE LENGTH ON PHYSICAL PROPERTIES MIMEO

Run No.	Stroke Length Inches	Strokes Per Minute	Basis Weight 17x22/500 Pounds	Burst Ratio Units	Tear Ratio Units M.D.	Tear Ratio Units C.D.	Tensile Ratio Units M.D.	Tensile Ratio Units C.D.	Porosity Seconds	Stretch Percent Elongation at Rupture M.D.	Stretch Percent Elongation at Rupture C.D.	Total Shake Speed Units
1	0	0	20.3	122	249	301	33.2	15.8	36.2	2.1	3.5	0
2	1/8	120	20.1	122	252	309	33.4	15.9	36.3	2.2	3.8	15
3	1/4	120	20.4	124	247	299	33.5	16.3	37.6	2.2	3.8	30
4	3/8	120	20.4	125	247	300	35.2	17.4	38.7	2.6	4.1	45
5	1/2	120	20.6	128	260	300	34.8	17.8	40.2	2.4	4.1	60
6	5/8	120	21.1	130	259	324	34.2	19.0	42.8	2.3	4.7	75
7	3/4	120	21.2	124	250	308	33.5	19.3	42.4	2.4	4.5	90
8	1/8	200	20.8	124	248	303	34.2	16.8	41.4	2.3	3.9	25
9	1/4	200	21.2	129	259	304	35.8	18.0	41.2	2.2	4.0	50
10	3/8	200	21.4	139	266	312	35.1	18.7	45.4	2.3	4.7	75
11	1/2	200	21.5	131	258	317	35.0	19.3	43.9	2.4	4.6	100
12	5/8	200	21.3	130	255	295	34.8	20.2	40.6	2.4	4.8	125

Note: Burst Ratio = Mullen (lbs.) ÷ Basis Weight (lbs./ream) × 100
Tear Ratio = Tear (Kg) ÷ Basis Weight (lbs./ream) × 100
Tensile Ratio = Tensile (Kg) ÷ Basis Weight (lbs./ream) × 100
Total Shake Speed = Stroke Length (Inch) × Shake Speed (Stroke per Minute)

TABLE I—EFFECT OF STROKE LENGTH ON ROLL DRAINAGE

Run No.	Stroke Speed SPM	Stroke Length Inches	Tube Roll Drainage GPM/Lin. Ft. Roll 1	Roll 5	Roll 9	Roll 17
1	0	0	9.07	4.22	1.98	1.52
2	120	1/8	8.54	4.48	2.10	1.55
3	120	1/4	8.42	3.94	1.85	0.87
4	120	3/8	7.83	3.38	1.90	0.79
5	120	1/2	8.11	3.22	2.14	0.82
6	120	5/8	7.50	3.38	1.99	0.90
7	120	3/4	7.57	3.39	1.92	0.92
8	200	1/8	7.54	3.49	1.96	0.82
9	200	1/4	5.66	3.22	1.95	0.78
10	200	3/8	7.00	3.30	2.10	1.00
11	200	1/2	8.60	3.57	1.92	1.12
12	200	5/8	8.73	3.56	2.12	1.40

TABLE III—EFFECT OF SHAKE SPEED ON TUBE ROLL DRAINAGE

Run No.	Shake Speed SPM	Stroke Length Inches	Tube Roll Drainage GPM/Lin. Ft. Roll 1	Roll 5	Roll 9	Roll 17
1	0	0	13.20	2.88	1.70	1.01
2	144	3/8	11.88	3.10	1.56	1.00
3	172	3/8	10.54	2.06	1.40	0.87
4	200	3/8	12.50	2.64	1.72	0.94
5	229	3/8	11.88	3.12	1.58	0.95
6	144	5/8	9.90	2.82	1.56	0.96
7	200	5/8	11.88	2.96	1.47	0.96

TABLE IV—EFFECT OF SHAKE SPEED ON PHYSICAL PROPERTIES BOND

Run No.	Stroke Length Inches	Strokes Per Minute	Basis Weight 17x22/500 Pounds	Burst Ratio Units	Tear Ratio Units M.D.	Tear Ratio Units C.D.	Tensile Ratio Units M.D.	Tensile Ratio Units C.D.	Porosity Seconds	Stretch Percent Elongation at Rupture M.D.	Stretch Percent Elongation at Rupture C.D.	Total Shake Speed Units
1	0	0	20.8	126	216	261	35.4	14.8	137	2.3	4.8	0
2	3/8	144	21.8	141	228	252	36.6	17.7	200	2.6	6.0	54
3	3/8	172	20.4	147	283	265	36.8	19.3	166	2.4	6.8	64.5
4	3/8	200	21.6	151	246	278	38.6	19.7	206	2.8	6.6	75
5	3/8	229	20.9	150	244	295	40.0	20.3	210	2.6	6.6	86
6	5/8	144	21.8	147	241	255	37.3	19.5	207	2.9	6.5	90
7	5/8	200	22.0	139	234	256	35.3	18.9	196	2.8	6.5	125

Note: Burst Ratio = Mullen (lbs.) ÷ Basis Weight (lbs./ream) × 100
Tear Ratio = Tear (Kg) ÷ Basis Weight (lbs./ream) × 100
Tensile Ratio = Tensile (Kg) ÷ Basis Weight (lbs./ream) × 100
Total Shake Speed = Stroke Length (Inches) × Shake Speed (Stroke per Minute)

the fiber characteristics of component pulps influence the individual physical tests. However, the bond furnish, containing only one type of pulp, resulted in maximum strength properties at a single energy level. The data for the mimeograph sheet were plotted and the curves for 120 and 200 strokes per minute indicated separately. In general, the resulting plot indicates that the strength properties of the lower speed operation will equal those of the higher speed operation if conducted at the proper stroke length as indicated by the optimum "total speed" level.

For the practical operation of this paper machine, the machine tender judged his manipulation of the shake to obtain the most favorable formation. In the two different sheets under consideration, his adjustment resulted in "total speed" levels that were within ten units of the optimum strength values.

In some instances, slightly higher strength values could have been obtained by adjustments based on the plotting of physical tests against "total shake speed."

Conclusions

1—The effect of stroke length on the drainage of table rolls indicates that the quantity of water removed passes through a minimum value and then increases to approximately that of no shake operation as the stroke length is increased.

The increase of stroke length at constant shake speed causes the physical tests on the resulting sheet to reach a maximum value and then decrease with continued increase in length.

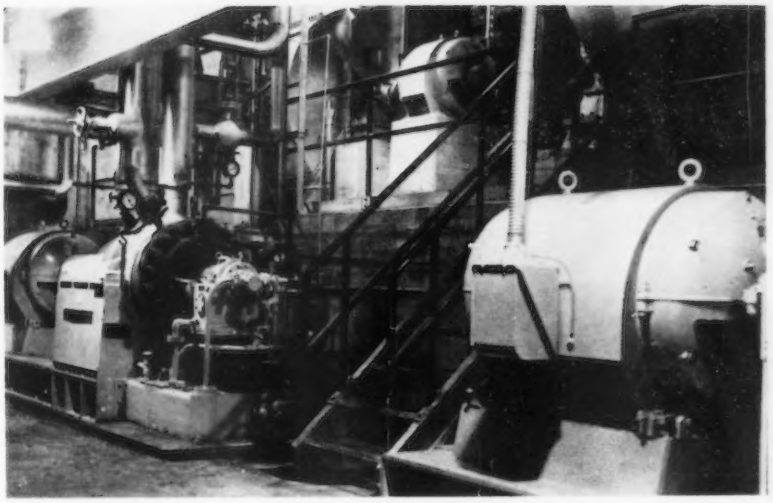
2—An increase of shake speed at a constant stroke length causes in the wire drainage to reach a minimum value and again increase.

The physical test properties of the paper tend to increase with increasing shake speed but certain properties decrease with further speed advancements under the conditions investigations.

3—There is, apparently, an optimum "total shake speed" level at which the operation of the shake will result in maximum strength properties. This level corresponds approximately with the point of minimum drainage.

Future Work

To further exploit the effect of the shake on fourdrinier operation many more avenues of investigation must be scrutinized. The influence of various machine speeds, the effect of furnish components as to type, fiber length, degree of refining, and percentages present are two categories of immediate interest. The inherent construction and mode of fourdrinier operation will also undoubtedly influence the effect and efficiency of the shake.



Silicone Insulated Motors Save Money for M-O

Minnesota & Ontario Paper Co. reports that it has obtained maximum serviceability—and saved over $28,000—by specifying silicone insulation instead of totally-enclosed fan-cooled frames for the main auxiliary drive motors in the powerhouse of their new plant at International Falls, Minn.

There are four motors involved: two 900 hp., 3600 r.p.m. units designed to drive 735 g.p.m. Worthington boiler feed pumps, one 600 hp., 900 r.p.m. induced draft fan, and a 300 hp., 1200 r.p.m. forced draft fan. All are 2300 volt, 3-phase, 60 cycle squirrel cage, induction motors.

All the motors have open type drip-proof frames, too. It was believed originally that the pulverized coal dust in the ventilating air might present a serious insulation abrasion problem. However, the motor supplier offered to supply, at 62 per cent the cost of Class B insulated TEFC motors, open motors with dependable abrasion resistance—and a far greater safety factor in operating temperatures.

They did so by wrapping every stator coil with two different types of silicone rubber tape. For maximum insulation value, the first layers were unsupported, semi-cured Silastic* tape. For maximum abrasion resistance, the last layer was the same Silastic* backed with glass cloth. Semi-vulcanized for handling ease, both tapes were cured out after wrapping to form a resilient, moisture-proof, one-piece insulating jacket with excellent dielectric properties and first-class abrasion resistance.

Although these materials insulate the motors for temperatures at the 180 C, or Class H, range, they are being operated at conventional Class B temperatures. The extra margin of thermal stability—and consequent power capacity—is held in reserve against potential overloads.

Even at that, Minnesota & Ontario achieved substantial initial savings. They can be seen in detail in the box below. The total is $28,340, or 38 per cent under the estimated cost of comparable Class B TEFC motors. Installed January 2 of this year, the auxiliaries have been in continuous service ever since and are giving excellent performance.

*T. M. Dow Corning Corp.

HP.	Number	Class B TEFC (approx.)	Sil-Clad Silicone	Saving
300	one	$ 8,660	$ 5,630	$ 3,030
600	one	16,875	10,125	6,750
900	two	48,842	30,282	18,560

How Mead Eliminated

Recovery Stack Snow at Kingsport

When the Mead Corp. began its pulp mill expansion program at Kingsport, Tenn., a serious problem in community relations developed. With the replacement of the old rotary type furnaces by a modern soda black liquor recovery furnace and increased production, recovery furnace "snow" released into the air and settled in the city. The problem was aggravated by the fact that the mill is located within the city limits and situated so that the prevailing winds blow towards the nearby business district about 50 per cent of the time.

Although electrostatic precipitators removed 90 per cent of the ash in gases from the recovery furnace, the remaining 10 per cent, a small fraction of the total soda to the furnace, created the problem. Because of its apparent low density, a small quantity represents a substantial volume and is easily blown for several city blocks when certain prevailing wind conditions exist.

It took two months of exhaustive testing and a good sized investment by the corporation to eliminate the problem, but for more than a year now, Kingsport air has been free of the tiny white particle.

For many years, Mead and the people of Kingsport have been good neighbors, but this tiny white particle posed a threat to the fine community relationship. It was important to find a solution to this problem which represented an infringement to the corporation's policy of genuine interest in the welfare of the general public.

Investigating the Problem

John K. Sullins, Mead engineer, was assigned to the project by Division Manager E. H. Niederauer. Research and development facilities of the corporation were utilized and expert advice sought from equipment manufacturers and others having experience in the field of air pollution.

The problem was attacked in several ways, by efficiency checks on the precipitator to be sure that it was performing at the guaranteed efficiency of 90 per cent or better, by controls to reduce outage periods and other means which provided no real measure of relief. Another electrostatic precipitator was considered for installation either in parallel or in series with the present unit. An increase in recovery efficiency to 95-98 per cent was anticipated by this method, but this was considered not to be adequate. The definition of the solution to the problem was—elimination of soda ash "snow" from the recovery furnace stack.

Two types of scrubbers were considered as good possibilities in the solution of this problem, (1) venturi and (2) fog type scrubbers. However, the venturi type was ruled out because of the extremely high draft loss across this type of unit. It was thought that a fog type scrubber might provide the best answer to the air pollution problem because of the ease of solubility of soda ash in warm water and the very low draft loss across this type of scrubber.

Results of Pilot Plant Studies

A 20″ x 20″ x 15 experimental unit was purchased from the Buffalo Forge Co. and installed to operate on recovery furnace exhaust gases removed from the breeching following the precipitator. The exhaust gas was obtained one foot from the bottom of the breeching where the dust concentration would be the highest in order to test it under the most severe conditions. Extensive tests covering a period of over two months were made to establish the dust removal efficiency of this type of unit. Results were checked by Dr. Melvin W. First, consulting and research engineer of Newton Centre, Mass., who represented the Buffalo Forge Co.

The experimental scrubber was rated at 500 feet per minute or, for the unit purchased, at 1400 cubic feet per minute. When received, the three banks of main sprays were all pointed in the direction of gas flow. It was found that more efficient operation was obtained with the upstream bank pointed in direction of the gas flow and the other two banks countercurrent to the flow. Recirculated water was used on the

TABLE I

% of Rated Capacity	61	80	91	101	110	116	125
Loading Grains/Cu. Ft.							
Inlet	0.338	0.336	0.347	0.321	0.334	0.303	0.314
Outlet	0.028	0.037	0.037	0.041	0.034	0.041	0.057
% Efficiency	91.9	88.5	89.2	87.2	88.7	86.6	82.2
Gas Temperature °F							
Inlet							
Dry Bulb	216	232	236	238	242	237	246
Wet Bulb	154	162	156	158	158	160	160
Outlet							
Dry Bulb	144	152	149	151	153	156	154
Wet Bulb	139	147	145	148	150	149	150
Pressure Drop Across Scrubber, Inches Water	0.35	0.49	0.63	0.75	0.85	0.91	1.02

The soda ash was recovered in the form of sodium bicarbonate. In the determination of the recovery efficiency the outlet discharge was converted to equivalent sodium carbonate.

main sprays, and the first two flooder banks of sprays at the eliminator plates. Fresh water was added through the last bank of flooder sprays.

Results of efficiency checks made from 60 per cent to 125 per cent of rated capacity are shown in Table I.

Effluent from the pilot scrubber contained an average of 2.4 g.p.l. as sodium bicarbonate. It was decided that this water could be reused as wash water in the mud washer of the continuous causticizing system. The water would be hot and the soda ash would be recovered from sodium bicarbonate in the causticizing system according to the following equation:

$NaHCO_3 + NaOH \quad Na_2CO_3 + H_2O$

The conversion of the bicarbonate to carbonate would lower the causticity of the weak liquor, but the sodium carbonate formed would also react with the free lime present in the lime mud to maintain about the same causticity equilibrium.

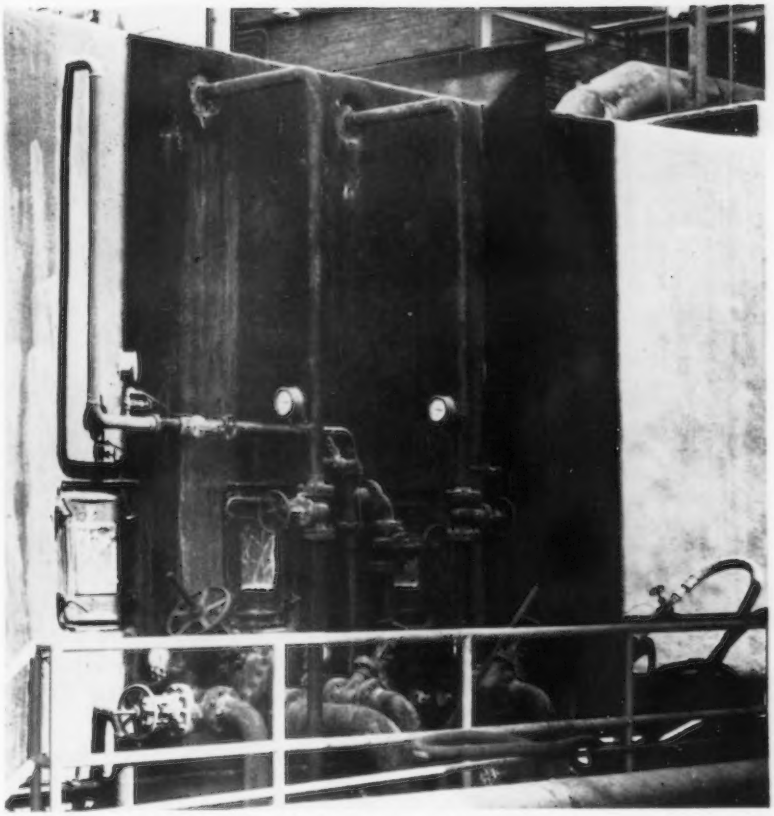
From results of the many trials on the experimental scrubber, it was predicted that scrubber efficiency should run around 88 per cent, draft loss about 0.75 inches of water, that soda ash being lost to atmosphere could be recovered and reused and most important that the stock discharge would contain no material in solid form. To confirm the latter result, glass plates and black paper were held directly over the stack following the experimental scrubber. After a period of time in the gas from the stack, a thin film of material formed, but specks were never observed at any time in the flue gas. The small quantity of material discharged to the atmosphere was in the form of minute droplets of sodium bicarbonate which showed no evidence of re-deposition.

Conditions inside the scrubber, however, were found to be very corrosive due to the carbon dioxide present in the hot and high humidity conditions present in the scrubber.

Results With a Full Scale Unit

Based on results of trials with the experimental Buffalo Forge scrubber, it was decided to purchase a full scale unit to be installed in series with the electrostatic precipitator. The scrubber was installed and placed in operation during the summer of 1956.

A temporary stub stack was used while the permanent stack was being converted to a "wet" stack. During this time and while the scrubber and breeching were being insulated some water droplets fell around the stack which on drying made white spots. These were not detected over 200 yards from the stack. Since the permanent stack has been placed in service no solids discharge has been observed around the stack.



CLOSE-UP OF SCRUBBER—Dark area is scrubber and light grey is the breeching on either side.

Average operating data of the complete recovery unit are shown in Table II.

TABLE II

Gas Flow to scrubber CFM	57,150
Gas Temp. °F	
From Precipitator	
Dry Bulb	272
Wet Bulb	169
From Scrubber	
Dry Bulb	166
Wet Bulb	162
Soda Ash Recovery	
Precipitator	
Loading to, Grains/Cu. Ft. ..	2.26
#/ Min. Recovered	18.33
% Efficiency	90.53
Scrubber	
Loading to, Grains/Cu. Ft. ..	0.203
#Min. Recovered	1.69
% Efficiency	88.23
Loading from, Grains/Cu. Ft. as Na_2CO_3	0.0271
Total	
#/Min. Recovered	20.02
% Efficiency	98.90
#/Min. Discharged to Atmosphere	0.33
Effluent from Scrubber	
GPM	25.3
Strength	
GPL as $NaHCO_3$	7.73
GPL as Na_2CO_3	4.88

Since a corrosion problem was experienced with the experimental unit, the full size scrubber was constructed of 304 stainless steel. The induced draft fan wheel and housing are also constructed from 304 stainless. The breeching after the scrubber and fan is constructed from heavy steel plate. The stack is completely lined with acid proof brick.

Recovery of soda ash from the scrubber is almost completely as sodium bicarbonate (a small amount of sodium carbonate is present). Effluent from the scrubber is being used in the continuous causticizing plant as part of the wash water for the mud washer. An automatic level controller installed in the surge tank following the scrubber provides a constant flow to the mud washer. The use of this effluent from the scrubber as wash water in the mud washer has proven to be completely satisfactory.

Operating Problems

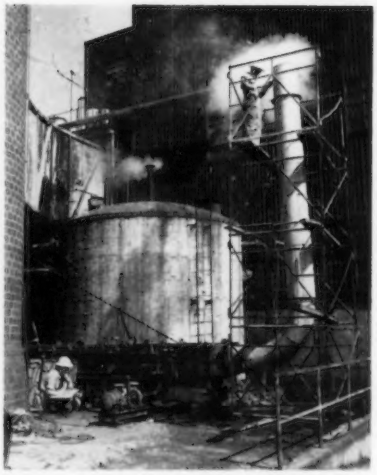
When the scrubber was first placed in operation the pressure at the main spray headers was 25 p.s.i.g. Gradually the pressure increased, indicating that the spray nozzles were becoming

plugged. On opening the first inspection port, it was found that some of the nozzles were completely plugged and others were ejecting a weak spray. The nozzles which were still open were cleaned by injecting inhibited muriatic acid into each header separately, with a steam ejector, while the recovery system was operating.

After an analysis of the scale showed it to be composed of calcium carbonate, a solution of Calgon was added with a Milton Roy pump to the suction side of the circulating pump. Scale formation has apparently been eliminated by the use of Calgon in the spray system.

At times crystalline sodium bicarbonate has formed on the last bank of eliminator plates. This was caused by contact of the hot exhaust gases with cold fresh water on the last bank of eliminator plates. Present plans call for the substitution of hot for cold water at this point.

It was found that the scrubber is unable to carry the full load of the recovery boiler without the precipitator. At one time when the precipitator was out of operation for 1½ hours, the heavy load of soda ash partially plugged the first bank of eliminator plates causing a severe loss of draft in the boiler. It was necessary to change to oil and to allow the circulating sprays to clean out the bank of eliminator plates. Instructions are now to switch to oil firing if the precipitator is down for over a half hour. Even when the precipitator is down and the scrubber is taking the full load, there has been no solids discharge from the stack.



TESTS on pilot model scrubber were run by Mead engineers.

Notes on Testing Techniques

Prior to the installation of the scrubber, the velocity of the flue gas in the breeching was measured with a pitot tube. The velocity was in the range of 600 to 900 feet per minute. When the scrubber was installed the breeching where the volocity is measured was increased to almost twice the original size which cut the velocity in half. At this flow measurement with the Pitot tube was impossible.

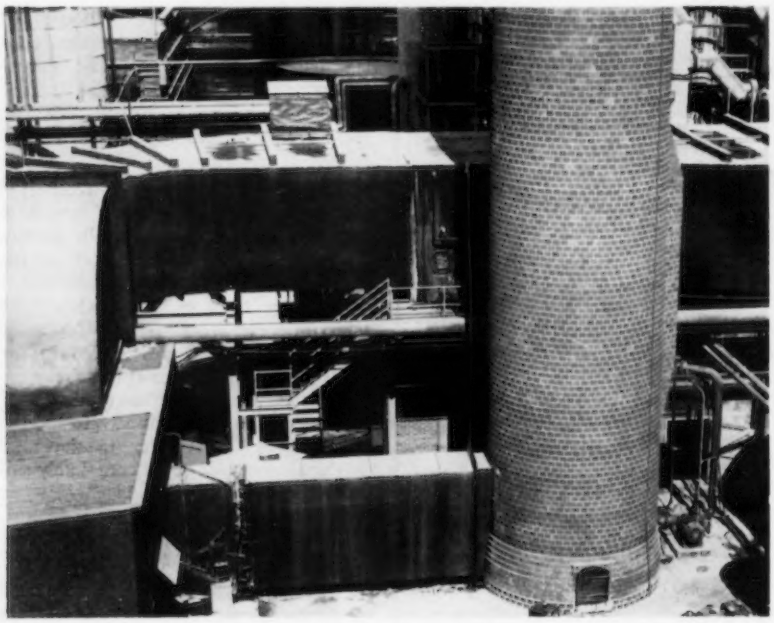
An anemometer on a long extension arm with remote control wires attached to the instrument to start and stop it was tried. Reproducible results were obtained, but an anemometer is not built to withstand the high temperature and dust conditions encountered in the area in front of the scrubber nor the high humidity conditions encountered after the scrubber.

The Gurley Instrument people informed us that their Pygmy current meter would have the same calibration for the flue gases as for water. Because of the relatively high meter r.p.m., it was necessary to attach an electric counter to the meter, replacing the conventional head phones.

Exhaust gas after the scrubber is almost saturated with moisture, the wet bulb temperature usually being only 2 to 4° F. below the dry bulb temperature. In order to collect a dry sample, an electric resistance coiled wire heating element was installed on each sampler.

The flue gas was sampled at isokenetic conditions. The samplers were designed to use 19 mm. dia. x 90 mm. paper thimbles for the collection of solid particles. Different size nozzles are used for the samplers depending upon the velocity of the gas tested. Normally the flue gas is collected at about ½ cubic foot per minute rate. Instantaneous flow measurements of the gas being sampled were obtained by use of an orifice in the sampling line. The orifice was constructed by forming a constriction in a piece of glass tubing. A "T" made from ⅛ inch pipe was attached on either side; a water manometer was attached to the "T". Each orifice was calibrated in the laboratory using a gas meter.

Sprague Type 1A gas meters with dial readings to the nearest 0.01 cubic feet were used to measure the gas flow. A thermometer and a mercury manometer were attached to each meter to indicate the temperature and pressure at which the flue gas was measured. A steam ejector nozzle was used to obtain the necessary vacuum to pull the flue gas sample through the sampling system.

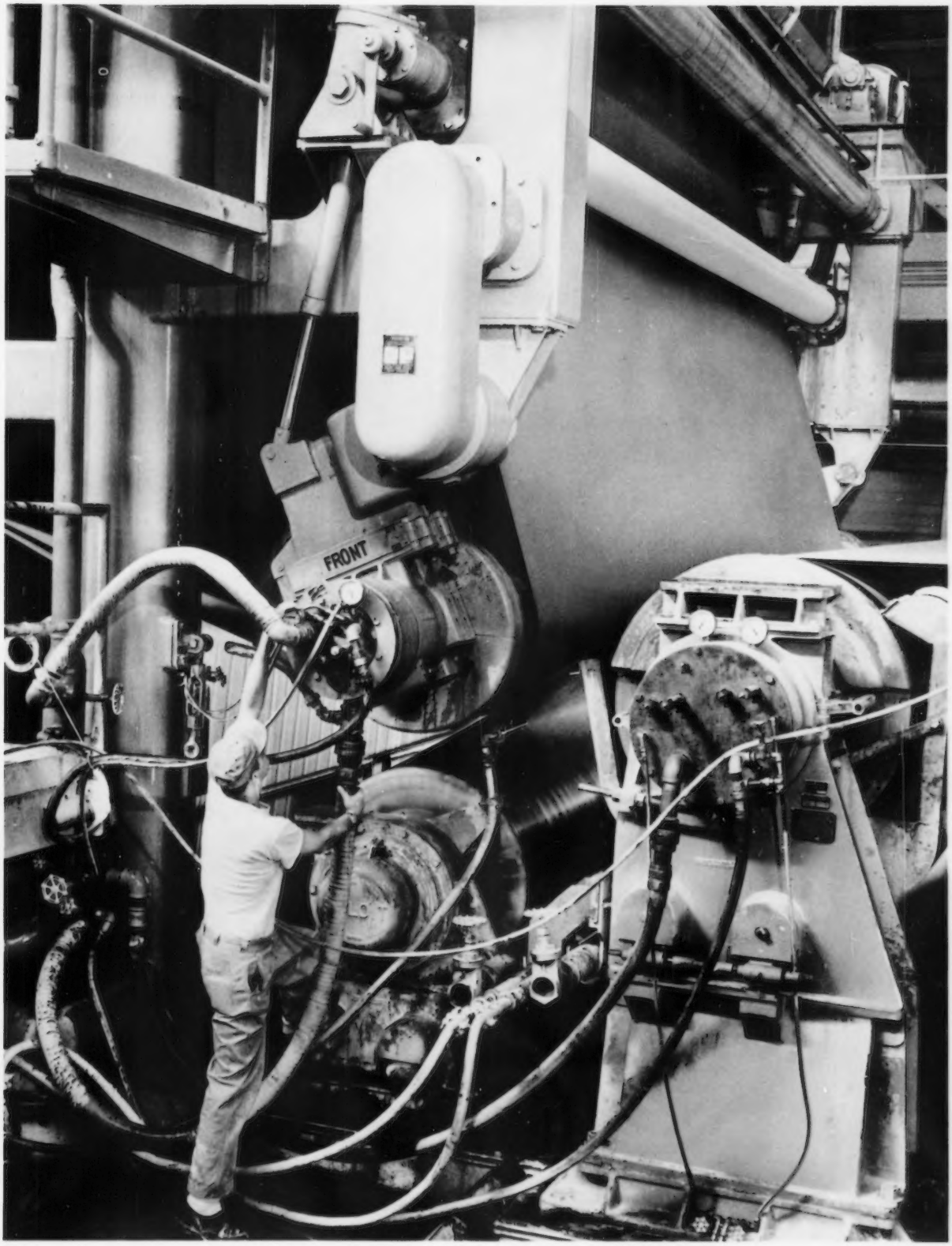


FOG-TYPE SCRUBBER (center) in shadow of stack. Breeching to electrical precipitator at right. Forced draft fan at left with breeching to stack in foreground.

Summary

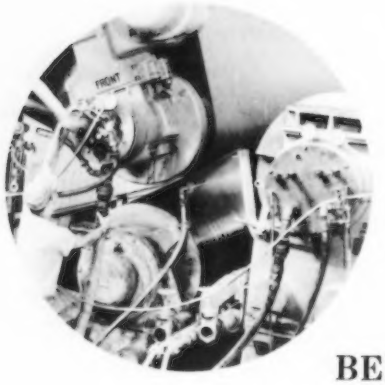
For more than one year now, ever since the summer of 1956 when the scrubber unit was installed, soda ash has been eliminated from the air of Kingsport, Tennessee. It took exhaustive testing and a good sized investment to find the answer, but the solution to the problem was a matter of pride to Mead.

Mead's success brought inquiries from other companies having a similar problem. Some have sent representatives to Kingsport for first-hand knowledge of how this paper mill solved a plaguing problem.



BOWATERS SOUTHERN PAPER CORPORATION. PHOTO BY J. W. MILLER

Beloit Suction Pick-up A milestone in modern papermaking, the Beloit Suction Pick-up arrangement has eliminated the open couch draw, enabling the sheet to be transferred from the Fourdrinier wire to the press section positively, at high speeds. For further details, please turn the page.



BELOIT SUCTION PICK-UP

...a milestone in modern papermaking

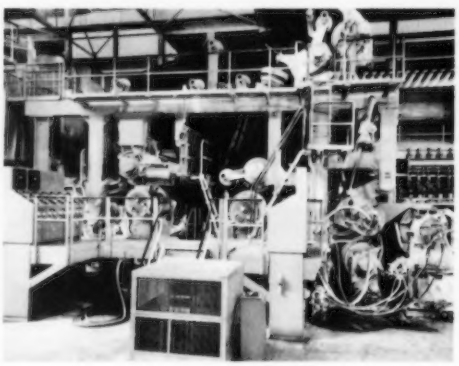
...materially increases efficiency, trim, test

Today's wide machines operating at speeds beyond 2000 feet per minute offer dramatic proof of the rapid evolution of papermaking machinery. One of the developments that has made this possible is the Beloit Suction Pick-up.*

Beloit installed one of its earliest full-size suction pick-up arrangements in 1932 on a 175″ machine. From this, Beloit engineers developed the modern suction pick-up in widespread use today.

This patented arrangement eliminates the open couch draw, provides a safe transfer of the sheet at high speeds, and cuts wet-end breaks to a minimum. Sheet handling at the wet-end is simplified. The sheet is picked off the wire by a suction roll and is carried automatically to the first open draw in the press section. The suction pick-up is one of many Beloit design features which provide faster, more efficient, trouble-free operation—the result of an extensive product development program to provide the papermaker with the most modern tools of production.

*United States and Foreign Patents and Patents Pending



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Assistant Director for Pulp, Paper and Paperboard,
Forest Products Division, U. S. Dept. of Commerce

An accumulation of paper and paperboard inventories by wholesale merchants, converters, and other consumers during 1956 is generally accepted as the principal explanation for the decline in production in the first half of 1957. This reasoning is based on the fact that except during periods of inventory cycles, paper and paperboard production and consumption usually parallel quite closely trends in total national economic activity. The Gross National Product in terms of constant dollars continued steady in the first six months of 1957; total industrial production as measured by the Federal Reserve Board Index gained about two per cent over the first half of 1956; and retail sales and services continued a moderate upward trend.

Only limited statistical data are available covering the physical volume of paper or paperboard inventories in converting or distribution channels. These show that stocks of newsprint in the hands of publishers increased considerably during 1956. Inventories of paperboard held by container manufacturers rose materially in the latter half of last year. On a value basis, according to Census data, stocks of paper and converted items held by wholesale paper merchants rose eight per cent during 1956, a part of which may be accountable to higher prices. Assuming that this situation prevailed for most grades of paper and paperboard, it would appear that the 1956 production level was somewhat in excess of actual consumption.

Declining Inventories—One Factor

The decline in production of total paper and board during the first half of 1957, amounting to 3½ per cent below the same period of 1956, points to at least some liquidation of previously accumulated stocks so far this year. Department of Commerce field office reports from various sections of the country indicated that this trend toward lower inventories is the result of ready availability of mill shipments and a return to more normal operating relationships. In fact, in some instances, inventories were reported as having been reduced to less than normal, with a tendency toward maintaining comparatively light supplies and with a dependency upon the mills for hand-to-mouth deliveries. With generally higher operating costs, converters and merchants are searching for every possibility toward reducing overhead; smaller inventories offer at least one opportunity.

Total production of paper in the first six months of 1957 declined nearly one per cent below the same period of last year. This decline probably would have been somewhat larger except for the increase in stocks at the mills, which at the end of June amounted to about twice the volume of mill stocks a year ago.

Paperboard production recorded a decline of somewhat more than four per cent below the first half of 1956, while construction paper and board output declined nearly 12 per cent.

Return to Normalcy

Assuming that the inventory cycle apparent during the past year or more is nearing completion, the industry should soon see a return to production levels more nearly matching trends in general economic activity. If so, actual production levels of some important grade groups in the remainder of 1957 may show modest upturns.

A return to normalcy within the pulp, paper and board industry in terms of keen competitive marketing conditions is likewise being experienced by most other manufacturing groups and business firms. The substantial capacity increase in most manufacturing industries has resulted in a lowering of the operating-capacity ratios. In manufacturing enterprises such as pulp, paper and board, where minimum economic expansion plans call for substantial investment, there are only limited possibilities for meeting future market needs through small-stage expansions from year to year. Instead, the planning must be long-range to meet the market needs of the years ahead. As a consequence of recent substantial capacity increases, the industry currently is faced with lowered operating ratios. Field reports point to various policies being pursued by individual companies to meet this challenge. In some instances smaller, less efficient or marginal mills are being temporarily or permanently shut down. In other instances mills are reducing their work week from seven to six or from six to five days, and in a few cases even more. Still other companies are arranging for periodic short-term shutdowns to even up production with new orders, while maintaining efficiency of six- or seven-day continued operation and also retaining availability of production workers.

For several years until mid-1956, the pulp, paper and board industry operated at near full capacity, with each year showing a marked gain in output over the previous year. It therefore has been most difficult to reorient both thinking and action in terms of the almost-forgotten strong competitive relationships normally existing in practically every industry.

Long Range Pattern

Executives within the industry have been alert to the long-range growth in demand for products of the industry, which is expected to increase about 40 per cent by 1965 over the level of 1956. Consideration has been given not only to necessary additional plants and equipment but likewise to future pulpwood timber supplies. Each year sees larger acquisitions of timberlands to meet the increasing need for pulpwood. There have been a number of important acquisitions or mergers with other forest products industries, such as lumber and plywood companies having extensive private forest reserves. There also have been notable examples of consolidations with converting operations. By and large, the industry as a whole is gradually acquiring greater diversification of products in the general field of forest products, including numerous converted items. These factors should assist in stabilizing the growth trend in terms of both production and satisfactory earnings relative to investment.

According to reports from Commerce field offices, various raw materials, including pulpwood and chemicals, were in good supply during the first half of 1957 but at generally higher costs. Field reports indicate increasing concern by industry over rising costs of production. Many companies refer to the effect on the upward cost cycle brought about by increasing wage rates from year to year. The recent seven per cent increase in railroad freight rates is also frequently referred to by industry officials as one disturbing factor in maintaining cost and price relationships.

The attempt to offset higher operating costs explains in part the large capital investments of recent years in modern equipment. New or improved methods to increase productivity and to cut costs wherever possible are receiving priority attention. This policy has been evident in all segments of the industry.

Pulp, Paper and Board Trends — First Half of Year

Wallace H. Pederson

Program Executive for Paper, Forest Products Division
U. S. Department of Commerce

Mid-year activity of the pulp, paper and board industry was somewhat below the traditional seasonal slack period. Order backlogs were at low levels and a number of mills had shifted from seven to six-day operations and some even to five days a week. It is expected that the usual fall pickup in business will result in a firmer operation for the balance of the year.

The pulp, paper and board industry operated at about three per cent lower production levels during the first half of 1957 as compared to the first half of 1956, but better than six per cent above the 1955 level. 1957 paper and board production will undoubtedly be the second highest on record—below the record 31.3 million tons achieved last year but above the 1955 tonnage of 30.1 million.

While second quarter 1957 production of pulp, paper and board was slightly above first quarter levels, it was below the second quarter of 1956 by 160,000 tons for wood pulp and 276,000 tons for paper and board.

Pulpwood

Supplies of pulpwood for current operations are satisfactory, as inventories of 6,083,000 cords at pulp mills at the end of June 1957 continued to be above normal. Department of Commerce field office reports indicate that plentiful inventory reserves of wood are available for pulp mill usage in the Lake States and Northwest. Coupled with the utilization of sawmill slabs and chips, the intensive efforts of the pulp mills and private pulpwood producers towards good forestry management assure a steady and plentiful supply of pulpwood in the years ahead.

Total United States pulpwood receipts of 17,896,000 cords during the first six months of 1957 were just under those received during the first half of 1956. Sizable declines in the South nearly offset increases in the North and West. Second quarter 1957 receipts of pulpwood were down nearly 160,000 cords from deliveries in the second quarter of 1956 and 1,144,000 cords below the first quarter of 1957 receipts, a decline somewhat below the normal seasonal drop.

Consumption of pulpwood followed the lower pulp production rate of the first six months of 1957 by using nearly one per cent below the 1956 first six months consumption level. Particularly noteworthy is the rise in ratios of pulpwood consumption to wood pulp production in recent years. In 1950 the ratio was 1.591 cords of pulpwood consumed to one ton of wood pulp produced. By 1956, 1.616 cords were required. In the first half of 1957 the ratio was 1.624. In other words, for every one million tons of wood pulp produced an additional 33,000 cords were consumed in 1957 as compared to 1950. This rise in ratio has been due in part to the increased production of bleached pulps, especially sulphate, where yields are less than for unbleached or groundwood pulps. This increased ratio is probably the principal reason why the decline in pulpwood consumption for the first half of 1957 from the same period of 1956 was only 0.9 per cent as compared with the 2.4 per cent decline in wood pulp production.

Wood Pulp

The production of wood pulp during the first half of 1957 generally followed the paper and board production declines but not to the same degree. Increased exports and consumption in non-paper uses helped keep the volume in pulp production to 2.4 per cent below the production in the first half of 1956 as compared to a drop of 3.5 per cent in paper and board production. Paper production was down less than one per cent, but paperboard and construction paper and board production were down 4.3 per cent and 11.9 per cent, respectively. In the latter areas a higher percentage of raw material is waste paper, while in paper more wood pulp is used. Thus, a large share of the decline in paper and board production was in these areas less dependent on wood pulp.

Wood pulp production in the second quarter of 1957 was 5,514,000 tons, slightly above the first quarter mark but 159,000 tons or 2.8 per cent below that produced in the second quarter of 1956. This compares with a decline of 1.9 per cent between first quarter production of 1957 and 1956.

Gradewise, the change in wood pulp production between the first half of 1957 and 1956 varied. Special alpha, bleached, and semibleached kraft and groundwood production were up in 1957 over 1956 while the other grades showed declines.

Wood pulp consumption in paper and board manufacturing in the first six months of 1957 amounted to 11,415,000 tons, a decrease of 2.1 per cent from that consumed in the same 1956 period. All grades showed declines except bleached and semibleached kraft and groundwood. The rise in the kraft grades probably is due to their increased usage in grades of paper or paperboard that formerly used sulphite or unbleached kraft. Also increased newsprint production in the South has consumed additional amounts of semibleached kraft as well as groundwood pulp.

Market pulp consumption by paper and board mills has declined faster than total consumption, being down 5.7 per cent in the first half of 1957 from the same period of 1956, while total wood pulp consumption by paper and board mills was down 2.1 per cent. The implication of this divergence is that mills dependent on purchased (market) pulp have operated at a somewhat slower rate than integrated mills.

The Bureau of the Census has revised its monthly Facts for Industry, Series M26A, "Pulp, Paper and Board," and will no longer report data on market pulp receipts. However, the Forest Products Division will make estimates so as to follow the shifts in market pulp received from domestic mills compared with Canadian and overseas sources.

Wood pulp consumption in non-paper uses during the first half of 1957 increased 8.9 per cent in comparison with the same period of 1956. Receipts of wood pulp were up 9.5 per cent in

similar comparison, with both domestic and Canadian pulps sharing in the rise. Inventories of wood pulp in the hands of such non-paper manufacturers as rayon, acetate, and cellophane plants were up four per cent between the end of June 1956 and 1957.

Imports of wood pulp during the first two quarters of 1957 were about 100,000 tons, or 9.2 per cent below the 1956 level, with both Canadian and overseas pulp showing declines. Gradewise, only the krafts showed increases, with bleached kraft up nearly one per cent and unbleached kraft up better than five per cent. United States exports of wood pulp during the first half of 1957 were 326,000 tons, a rise of 20 per cent over 1956 levels.

Waste Paper

Following the lowered production rate of paperboard, waste paper consumption during the first six months of 1957 amounted to 4,279,000 tons, a drop of 7.6 per cent from the same period of 1956. Receipts followed the consumption pattern and inventories at the end of June 1957 were up only 2.3 per cent over a year ago. Wastepaper prices declined considerably from a year ago as evidenced by the BLS wholesale price index of June 1957, 66.1 as compared to 114.3 in June 1956 (1947-1949—100). If the anticipated fall pickup in paperboard demand materializes, additional supplies of wastepaper will be required and an upward adjustment of prices should result.

Paper and Board

The backlog of orders in paper and board mills has been reduced to levels which have necessitated a reduction in operation in many cases from a seven-day week to six days and in some cases to five days or below. According to Department of Commerce field office reports, reductions in merchants' and converters' paper inventories have been taking place since the first of the year. With slackened demand, paper and board distributors and converters are hesitant to do much forward buying until there is tangible evidence from their customers as to future needs. Coupled with this slackened demand is probably a feeling by consumers that paper and board prices should be static in the near future. Paper and board mills, on the other hand, indicate increasing pressure in rising costs of chemicals, wages, transportation, etc. The balance of the year may result in tonnage output at a higher level than during the first six months.

Additional capacity planned more than two years ago has been coming into operation at a time when a temporary decline in demand has occurred. It should be recognized that paper and board capacity increases are not based on short-term year-to-year markets, but on the demand prospects for a minimum of two to five years. Further, when additional capacity does occur it usually comes as 50,000 to 150,000 tons a year from each new mill or expansion, costs of which run into the tens of millions of dollars. Because of the long forward planning and construction time involved, the new capacity cannot be expected always to occur when the current market is seeking this additional production. Thus the capacity cushion now available in many grades will gradually revert to normal proportions as new uses and expansions of existing markets come into being.

Paper and board production in the first half of 1957 amounted to over 15.5 million tons, which was 561,000 tons, or 3.5 per cent below that produced in the record-breaking first half of 1956. It was, however, 5.4 per cent above the 1955 production during the same period. The decline in 1957 production from 1956 levels occurred in both paper and board production with paperboard and construction paper and board accounting for the major portion of the decrease.

Paper

Although the production of paper, as distinguished from paperboard, showed a downward shift of less than one per cent in the first half of 1957 as compared to the first half of 1956, this relatively small decrease was not shared by all grades. Three grades showed increases: Newsprint, up 18.6 per cent; machine-coated paper, up 6.9 per cent; and sanitary papers, up 4.9 per cent. Production of other grades showed declines from 1956 levels ranging from 2.3 per cent for fine papers to 8.5 per cent for groundwood papers.

The BLS wholesale price index of paper rose 4.3 per cent from June 1956 to June 1957, with all reported grades rising in similar degree.

Newsprint

Newsprint consumers are having no trouble obtaining all the newsprint they want. In fact, supplies are of such magnitude that some Canadian and Northern United States mills have been forced to reduce operations recently. Inventories of newsprint held by United States mills and consumers at the end of June were up an estimated 82,000 tons over those on hand at the beginning

of the year. Publishers' stocks, according to the American Newspaper Publishers Association, at the end of July represented 63 days' supply, or about 40 per cent above the 45-day level regarded as normal.

Newsprint production in the United States, on the other hand, has continued to climb and was 943,000 tons during the first two quarters of 1957, an 18.6 per cent increase over the first half of 1956 rate. Canadian newsprint production was up 3.6 per cent, giving a total North American increase of 6.6 per cent, or about 263,000 tons. New capacity in both the United States and Canada became available during the first half of the year and additional increases are slated.

Printing Papers and Fine Papers

Printing paper production in the first half of 1957 was down more than three per cent from the same 1956 period. Further, manufacturers' stocks of printing papers rose from about 160,000 tons at the beginning of 1957 to 290,000 tons at the end of June. Both groundwood and book papers showed more than 8.5 per cent declines, but machine-coated paper production was up nearly seven per cent, indicating further acceptance of this grade by the printing and publishing industries as replacement for uncoated papers. The production decline for printing papers is not necessarily indicative of a slackening in the printing and publishing industry, as there was evidence of some inventory accumulation in 1956 which consumers of printing paper apparently have been using.

Fine paper production followed the printing paper decline; first half of 1957 production was 2.3 per cent below the comparable period of 1956.

Reports from Department of Commerce field offices indicate that most consumers and wholesalers of paper are experiencing little difficulty in obtaining current paper supplies and consequently are not doing such forward buying. The result is that backlogs of unfilled orders at paper mills are below normal. Paper mills are faced with stronger competition than they have been accustomed to for quite some time. Field reports indicate that so far the competition has been confined to quality and service, with no indication of prices weakening.

Coarse and Special Industrial Papers

The demand for course papers, primarily an industrial packaging material, has dropped; production in the first half of 1957 declined 6.7 per cent, or 136,000 tons, from the same period of 1956. Most of this decline was in the second quarter of this year when course paper production was down nearly 100,000 tons from the 1956 level. Production of special industrial papers was approximately equal in the first quarter of each year, but in the second quarter 1957 was 10,000 tons below the 1956 figure and accounted for a drop of 3.2 per cent between the first half of 1956 and 1957.

Sanitary and Tissue Papers

Sanitary papers were one of the three paper grades that registered production gains in the first half of 1957 over the first half of 1956, with a gain of 4.9 per cent. Tissue paper production decreased 4.4 per cent in similar comparison. Sanitary papers are considered a more direct consumer item than tissue paper, demand for which as a wrapping material is more dependent on other factors.

Paperboard

The demand for paperboard has continued to be below 1956 levels; production in the first half of 1957 was 4.3 per cent below that of the same half of 1956. With its dependence on general industrial activity, no sudden upsurge in demand is expected but as general conditions improve seasonally for the fourth quarter higher operation rates should prevail. Trade association data indicate that the paperboard operation ratios during the first part of August were closer to 1956 ratios than earlier in the year. With the additional paperboard capacity available this year this implies that tonnage demands are strengthening even though ratios of operation to capacity are not at 1956 levels.

As usual, containerboard production, the major tonnage item, dictated the paperboard trend during the first half of 1957 and was down 4.3 per cent from a year ago. Bending and nonbending board production followed this trend with percentage decreases of 2.3 and 4.7 respectively. Miscellaneous board, a major portion of which is accounted for by liners for gypsum board, declined 10.8 per cent in the same period, a decline similar to the 11.9 per cent shown by construction paper and board.

How Westminster Uses Radio-Telephones on Fork Trucks

Westminster Paper Co. Ltd., New Westminster, B.C. has developed an interesting application of radio telephone. The company uses them on five of their forklifts to facilitate interplant and intraplant material handling. The plant has several acres of open storage area and three floors of converting operations; radios are used to convey messages between the forklifts stationed on the various floors and the yard machines.

The forklift operator who has a load destined for another floor, or who has need of another forklift's help because of the surging workload, merely picks up his microphone and talks directly to the individual he wishes to reach. In this way a very mobile gang can be quickly assembled if an emergency arises.

The system has two profit paying advantages. The first is that the operators can shuttle loads from floor to floor without loss of time by either driver. The first operator places his load on the elevator and tells the receiving driver that the elevator is loaded. This message reaches that driver wherever he is in the mill, and he can schedule his work accordingly. It also goes through the other driver's "open sets" to all the rest of the drivers on duty. Thus they know exactly what the other drivers are doing at all times and can schedule their movements accordingly. This is the second profit paying advantage—less lost time waiting for another driver to work with.

The radios make it possible to use five widely scattered, but highly mobile forklift units, as a single closely controlled unit. They can be concentrated in time of need quickly and effectively, or they can speed up their routine work of moving and passing supplies by being able to communicate and receive answers from their fellow workers regardless of their actual location on the mill property. This reduction in waiting time has resulted in an approximate labor saving of 20 percent in the size of the crew required to do the job.

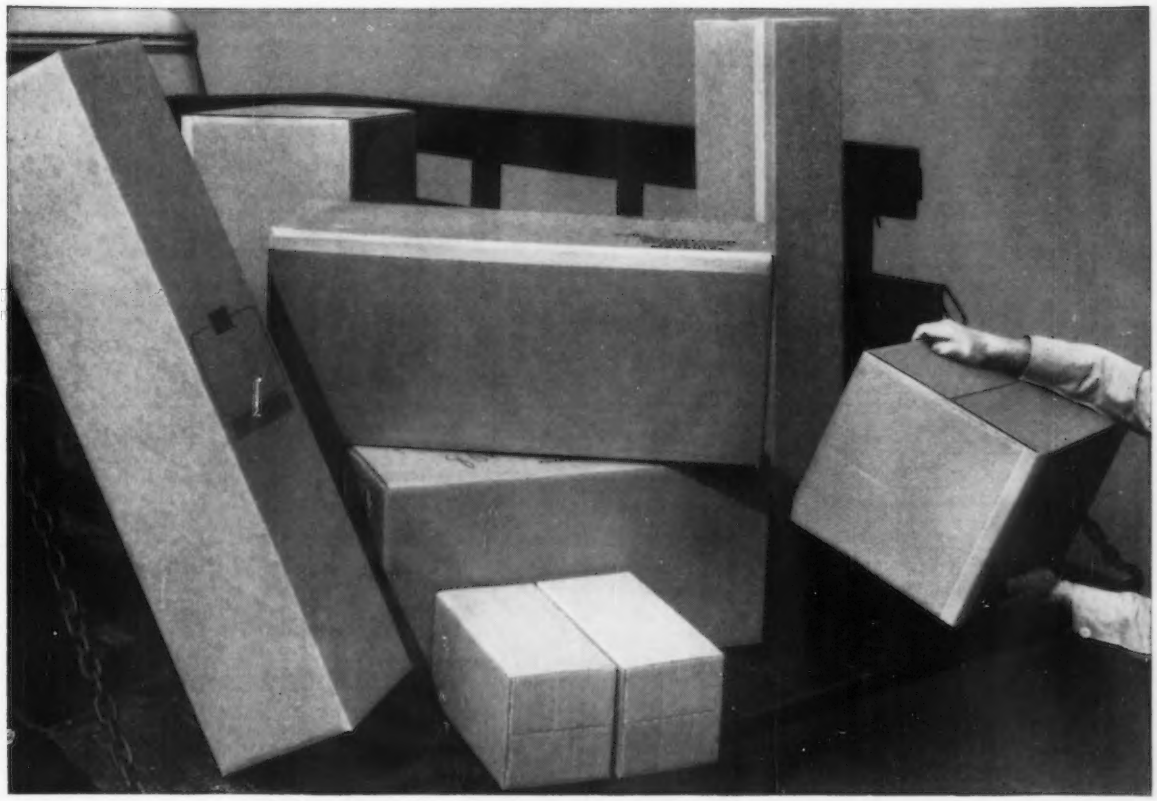
The radios at Westminster Paper are on a rental basis, maintenance being provided by the owners every 24 hours. When mounting the radios on the lift trucks, it was necessary to convert the electrical power generators from direct to alternating current. The only additional alterations were on the small trucks. Special overhead guards were fabricated for these on which the radios are mounted for protection.

You get tough, WATERPROOF glue lines

with — **STAYBIND**
Waterproof Corrugating
Starch #5030
Manufactured by A. E. Staley Mfg. Co.

— **DOUGLAS**
Waterproof Corrugating
Adhesive #7
Manufactured by Penick & Ford, Ltd., Inc.

...both contain Koppers resorcinol



PAPERBOARD that is processed with these dependable adhesives is actually bonded to withstand the effects of moisture and rough handling. For both of these resorcinol-base starches are specially formulated to produce waterproof glue lines of extra strength and toughness.

Paperboard sheets glued with these adhesives have wet strength far beyond those glued with ordinary starches. And sections that have been soaked continually in water for over 24 hours at 75°F. have shown no separation at the glue lines of the single and double face.

On the production line, there are many advantages, too. Both adhesives are compatible with domestic starch pastes, which eliminates the need for complete system wash-ups before or after waterproofing runs. Resorcinol adhesives are fast curing, and become waterproof immediately upon setting—no aging of the paperboard is necessary. Moreover, their alkaline nature results in low gelatinizing temperatures, and makes possiole production speeds at rated machine capacity. With resorcinol starches, you can make waterproof paperboard 10% to 30% faster than with acid formulations.

Specify these products when you need a waterproof adhesive you can depend on. Both meet the most rigid specifications, and both are made with Koppers resorcinol.

KOPPERS COMPANY, INC., Chemical Division, Pittsburgh 19, Pennsylvania

KOPPERS

KOPPERS CHEMICALS

NEW LITERATURE

DUAL OUTPUT LUBRICATOR. (Technical Reference 57B) Discusses lubricator operation and its capacities. Also photographs and a drawing illustrate its internal mechanism and a chart gives discharge per cycle, per hour, and time for one pint discharge with various cam settings and cycle times. **Service, Bijur Lubricating Corp.,** 151 W. Passaic St., Rochelle Park, N. J.

DIRECT CURRENT MOTORS AND GENERATORS. (Catalogue-Folder SP-182) Describes their general construction features. Also includes cutaway illustrations on applications in several typical industries, as well as dimensions and ratings. **Marathon Electric Mfg. Corp.,** Wausau, Wis.

MULTI-METAL METALLIC MEDIA FOR SOLIDS-LIQUID SEPARATION. (Catalogue 57) Contains illustrated sales copy and is interspersed with numerous tables. Also includes a chart which shows the results of particle retentivity, and list of available literature. **Multi-Metal Wire Cloth Co., Inc.,** 1350 Garrison Ave., New York 59, N. Y.

PLIOVIC AO. (Tech Book Facts Bulletin) Evaluates sixteen commercially available permanent type plasticizers that find application in plastisols. Chemical Div., **Goodyear Tire & Rubber Co., Inc.,** Akron 16, Ohio.

MOUNT HOPE ROLLS FOR FOURDRINIER. (Bulletin) Tells how their rolls improve quality, operating efficiency and profits, by eliminating wrinkles, baggy edges and soft spots. A second bulletin will cover cylinder machines and the third converting. **Mount Hope Machinery Co.,** 15 5th St., Taunton, Mass.

OAKITE DRYCID. (Service Report B-6564) Describes the properties and uses of this powdered acid scale and rust remover. Also recommends solution concentrations and application methods. **Oakite Products, Inc.,** 157 Rector St., New York 6, N. Y.

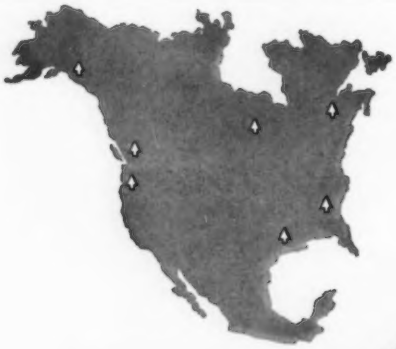
POWER-SAFE ELECTRIC BRAKES. (Technical Report WEB 6293) Tells the story of their newest electric brake designed for fail-safe applications. Also includes photographs, drawings, and diagrams. **Warner Electric Brake & Clutch Co.,** Beloit, Wis.

RYERTEX-OMICRON PVC. (Bulletin 80-3) Describes this strong, light, corrosion resistant plastic which is used for pipe, sheets, rods and fabricated part. **Joseph T. Ryerson & Son, Inc.,** Box 8000-A, Chicago 80, Ill.

STRESS RUPTURE DATA ON B&W CROLOYS. (Technical Data Card 153-B) Furnishes the results of tests on 14 steels including carbon steel, several alloy steels and 10 different stainless steels. **Tubular Products Div., Babcock & Wilcox Co.,** Beaver Falls, Pa.

S-W FLAT BED DRAINER. (Bulletin 186) Contains complete specifications and details on this drainer which is designed to increase the efficiency of any pulp feeding system. **Sprout, Waldron & Co., Inc.,** Muncy, Pa.

WATER TECHNOLOGY IN THE PULP & PAPER INDUSTRY. (TAPPI Monograph Series 18) This volume is the second on the use of water in the pulp, paper, and paperboard industries and contains chapters on the characteristics of water, water consumption, filtration, coagulation, sterilization and deodorization, corrosion and its control, softening and demineralization, boiler feedwater treatment and the use of amines in feedwater treatment. **Technical Assn. of the Pulp & Paper Industry,** 155 E. 44th St., New York 17, N. Y.



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new type
DRY GROUNDWOOD
from Canada in production
during fourth quarter 1957

WOODPULP, INC.

Chrysler Building, NEW YORK 17, N. Y.

BY SPECIALLY DEVELOPED FLUFF-DRIED PROCESS

- Cleanliness improved by closed system of manufacture
- Fibre qualities preserved throughout drying stage
- Repulping time reduced to a new minimum
- Cost saving in freight and handling
- Storage without deterioration

REGULAR SHIPMENTS VIA DIRECT RAIL OR VESSEL

NOW CONTRACTING FOR 1958 PRODUCTION

PRICES OF FIBERS

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$$90.00/ —	$$90.00/ —	$$90.00/ —
Bleached Gw'd.	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/ —	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd	150.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00 —
Sulphite Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.00
No. 1 Unblchd. Muslins	16.00/ 16.75
Blchd. & Unblchd. Underwears	15.00/ 15.50
No. 1 Light Silesias	7.00/ 7.50
No. 1 Light Blue Overalls	7.25/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.50/ 6.25
Cottonades	3.25/ 3.75
No. 1 Washables	2.50/ 2.75

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.25
Cotton Pants & Overalls	2.00/ 2.25
Twos and Blues, Repacked	1.50/ 1.75
No. 2 Roofing	.60/ .70

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended September 30	For 100 lbs.
Grade 1 n.a.	
2	$9.50/ $9.25
3 1 cut—felting	8.75/ 7.75
4	8.00/ 7.00
5	7.00/ 6.50
6	6.00/ 5.50
7	5.50/ 5.00

*Based on 73% cellulose.

Old Rope & Bagging

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$5.75/$6.50
Scrap Burlap	4.50/ 5.25
Australian Wool Pouches	5.25/ 5.75
Gunny	5.50/ 6.25
No. 1 Domestic Manila Rope	7.75/ 8.25
No. 1 Foreign Manila Rope	6.25/ 6.50
Domestic Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	September 30	September 30	September 30	September 30
No. 1 Mixed Paper	$4.00/ 6.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	13.00/ 15.00	11.00/ —	12.00/ —	11.00/ —
Overissue News (Lg. size)	14.00/ 16.00	12.00/ 14.00	17.00/ —	13.00/ —
Mill Wrappers	11.00/ 13.00	9.00/ 14.00	7.00/ —	13.00/ —
Old Corrugated Containers	24.00/ 25.00	21.00/ 25.00	25.00/ 27.00	18.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 42.00	30.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	25.00/ 30.00	37.00/ 40.00	35.50/ —	30.00/ —
(Semi-chem. medium)	45.00/ 50.00	45.00/ 50.00	45.00/ 50.00	40.00/ 45.00
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	40.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	55.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	50.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	65.00/ —	45.00/ 50.00
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 30.00	16.00/ —	25.00/ 30.00
White Newsblanks	50.00/ 55.00	45.00/ 55.00	40.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	60.00/ —	— / —
Super Soft White Shvs.	65.00/ 70.00	70.00/ 75.00	70.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	100.00/110.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	115.00/125.00	120.00/125.00	95.00/100.00	100.00/110.00
Col. Tab. Cards	50.00/ 60.00	55.00/ 62.00	47.50/ —	32.50/ —
Manila Tab. Cards	60.00/ 70.00	70.00/ 75.00	65.00/ —	65.00/ —
No. 1 Col. Ledger	30.00/ 32.00	30.00/ 35.00	40.00/ —	22.50/ —
White Ledger	45.00/ 50.00	50.00/ 55.00	52.50/ —	35.00/ —
Mixed Book & Mag.†	18.00/ 20.00	19.00/ 20.00	12.00/ —	— / —
No. 1 Books‡	25.00/ 27.00	22.00/ 24.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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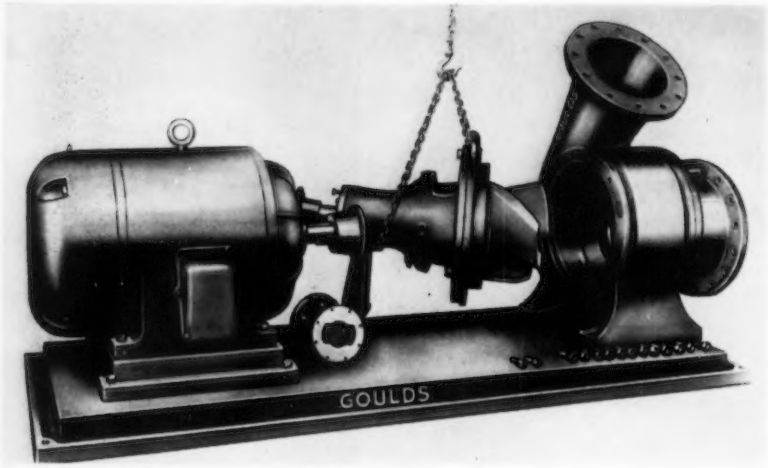

Heavy Duty Process Pumps

New heavy duty process pumps for the pulp and paper industry, featuring "back pull-out" design for easy dismantling, have been introduced by Goulds Pumps, Inc. of Seneca Falls, N. Y. These pumps are single stage with end suction and vertically split casing. They are available for capacities to 9,000 g.p.m. and heads up to 160 ft.

The new pumps are designed especially for handling paper stock, white water, liquors, and for digester circulation in paper mills, and also for slurries, tailings, contaminated waste matters or for any heavy duty service as required for liquids with solids in suspension. Spacer coupling between the driver and the pump and special back pull-out design permits the entire rotating element to be removed from the casing without disturbing piping connections. This dis-assembly requires only the removal of the spacer from the spacer coupling and bolts from the casing cover. Re-assembly is equally simple.

Casing is of the shell volute type with drain and priming openings. Self-venting discharge at highest point in casing eliminates air binding and insures steady flow. Wear between the impeller and suction side plates due to abrasives and in materials handled may be compensated by a simple external adjustment to restore original clearance.

These Goulds pumps are adaptable for a wide variety of services in the pulp and paper industry because of interchangeability of parts and availability of pump parts in a variety of materials, including bronze fitted, all iron, all bronze, AISI 316, all iron (SS trim) and all bronze (SS trim). For

(Continued on page 62)

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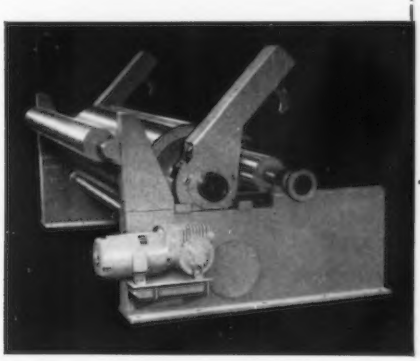

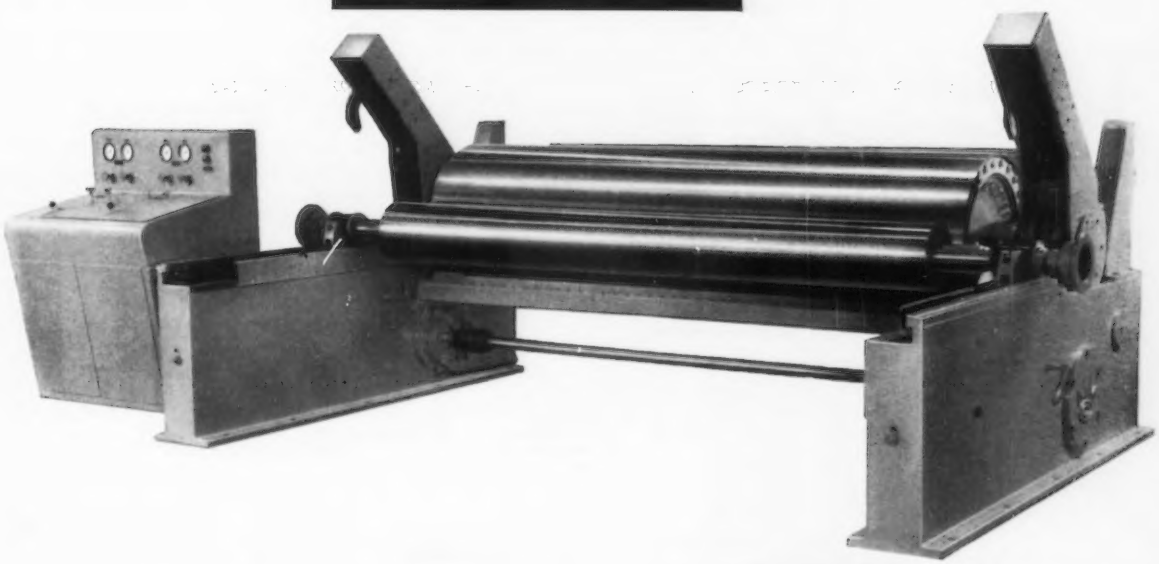

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Did You Miss Any of These Articles?

Did you miss any of these feature articles which appeared in the September issues of *Paper Trade JOURNAL?*

Automatic Control Provides More Efficient Precipitator Operation
History of Papermaking in Ohio
Removing the Bark from Pulpwood
New Automatic Machine Makes Pallets from Corrugated Board
What Are Earning Opportunities in Our Industry
Kraft Expansion at Camas Climaxed by New Bleach Plant
Modern Barking Methods and Bark Disposal
Forecasts of Demand for the Industry's Products
S. D. Warren Maintains Own Pressroom
Kimberly-Clark Operates Europe's Fastest Tissue Machine
Examples of Modern Woodyards
Canada's Most Modern Insulating Board Plant
Continuous Starch Cooking Is Effective Means of Preparation
Many Advantages are Obtained with New Flakt Pulp Drier at Oskarstrom Mill
Theoretical Aspects of Groundwood Production
How to Increase Capacity of Cylinder Mold Machines
New Concepts for Screw Press Design
Comparative Study of Linings for Sulphite Digesters
What Factors Influence Grinder Capacity

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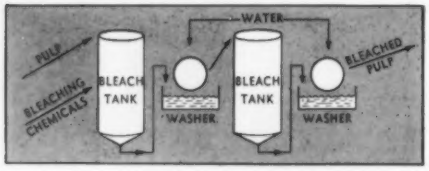

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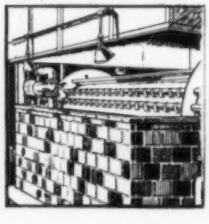

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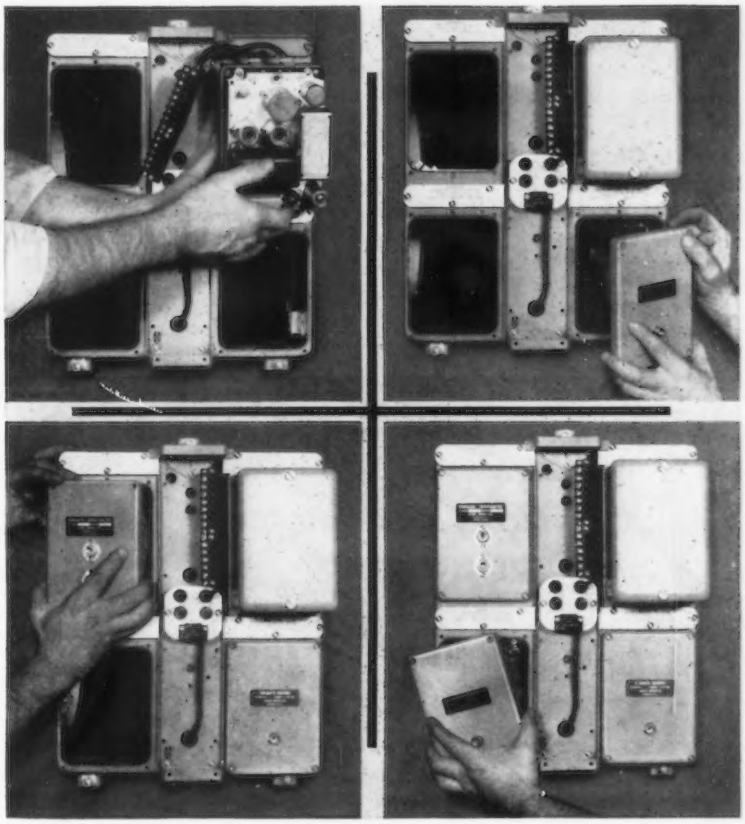
coml. bulk, c.l. wks.	cwt.	$1.85	/ 2.05
iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00	/ —
Arg. ex. dock	cwt.	21.50	/23.00
New Zealand	cwt.	22.50	/25.00
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.30	/ —
flak. & grd. drums, c.l.	cwt.	4.70	/ —
liquid 50% tanks		2.90	/ 3.00
liquid 73% tanks		3.00	/ 3.10
China Clay			
dom., dry-grd., airfloat:			
325 mesh bgs., c.l. Geo.	ton	10.00	/ —
300 mesh, bgs., c.l. Geo.	ton	13.50	/14.50
imp., white, lump, c.l. ex. dock		20.00	/35.00
Chlorine:			
single-unit tanks, works	cwt.	3.15	/ —
multiple unit, 2-5 cars per yr.		5.25	/ 4.85
Lime:			
hydrated, bulk, c.l. N.Y.	ton	23.63	/ —
quicklime, bulk, c.l. N.Y.	ton	22.13	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan,	cwt.	7.45	/ 7.55
Rosin size:			
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.44	/ 7.48
Saltcake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
Soda ash:			
light, 58% ash bags, wks.	cwt.	1.90	/ —
bulk, c.l. wks	cwt.	1.60	/ —
Sodium chlorate:			
tank-cars, wks.	cwt.	8.15	/ —
drums, wks.	cwt.	9.00	/ —
Sodium peroxide:			
dms., c.l. E. of Miss.	lb.	.20½	/ —
l.c.l. (same basis)		.21	/ .21½
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.20	/ —
drums, c.l. wks.	cwt.	1.55	/ —
47° Be. WW.			
tank-cars, c.l. wks.	cwt.	1.90	/ —
drums, c.l. wks.	cwt.	2.25	/ —
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.23	/ —
Starches:			
corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.49	/ 6.75
white, dextrins	cwt.	8.08	/ 8.20
chlorinated	cwt.	8.25	/ 8.35
potato, Idaho, c.l. wks.	cwt.	6.50	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	6.25	/ —
Sulphuric acid:			
60° Be. cbys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.45	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract, long ton		23.50	/ —
f.o.b. vessels Gulf dock	ton	25.00	/ —
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535	/ —
Talc, fibrous grd., bags:			
c.l. wks., N.Y.	ton	28.00	/ —
l.c.l. wks., N.Y.	ton	31.00	/36.00
Titanium dioxide:			
anstase, c.l. dlvd. E. bags.	lb.	.25½	/ —
l.c.l. dlvd.	lb.	.26½	/ —
rutile, c.l. dlvd.	lb.	.27½	/ —
l.c.l. dlvd.	lb.	.28½	/ —

CUSTOM BUILD your own Bailey Recorder



These four views of the back of a Bailey Recorder show how four plug-in units may be added as needed to meet almost any recorder application.

The freedom and flexibility of "do-it-yourself" instrumentation is yours in the Bailey Recorder. A variety of plug-in units make it possible to record, control, and retransmit any variable that can be converted to a pneumatic or electric signal.

The basic plug-in units are the Bailey a-c and d-c Electronic Receivers and Pneumatic Receivers. Any four of these may be used in one recorder, intermixed in any way, to provide four continuous records on one chart.

For automatic control, other plug-in units are available.

For square root extraction or linear integration, there are two plug-in variations of the Bailey Integrator.

When you want a pneumatic signal that varies according to a pre-set pattern plug in a Bailey Program Controller.

Periodic running time of a condition or process is recorded on the chart when a Bailey Running Time Recorder is used.

These and other plug-in units are described in Product Specification E12-5. Some companies stock Bailey Recorder cases and assorted plug-in units. As instrumentation and control needs arise they build up the kind of recorder-controller required, using the proper plug-in units from stock. Unmatched versatility such as this means lower instrumentation costs.

For the complete story of how easily you can custom build this recorder to your needs, see your Bailey Engineer. G43-1

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In Canada—Bailey Meter Company Limited, Montreal

further information on heavy duty process pumps, write without obligation to Goulds Pumps, Inc., 37 Black Brook Road, Seneca Falls, N. Y.

Speeds Cleaning of Boilers

National Aluminate Corp. is now marketing several new chemicals that appreciably simplify cleaning of boilers and industrial equipment.

Nalco 85, a boiler cleaning aid and supplementary treatment, effectively removes a high percentage of deposit. The product is unique in that it is alkaline in nature, and it may be applied to an operating boiler. According to the manufacturer Nalco 85:

a) cuts cleaning time,

b) cleans headers and other areas inaccessable to manual cleaning,

c) proves particularly effective in dispersing calcium carbonate deposits,

d) unlike acid materials, does not require neutralizing after cleaning.

For industrial process and heat exchange equipment, new Nalclean 66 and 68 are reported to be powerful cleaning agents. They are blends of both organic and inorganic acids, and are effective in removing a wide variety of scale and deposits. In addition, they contain corrosion inhibitors which protect metals commonly found in industrial equipment. Beyond being safe for equipment metals, Nalclean 66 and 68 minimize hazards to personnel. Manufactured in a dry, pulverized form, they may be conveniently handled and stored. Another feature is an indicator dye, incorporated to give visible evidence when solution strengths are depleted.

Technical literature and additional information are available on request. Write National Aluminate Corp., 6221 West 66th Pl., Chicago 38, Ill.

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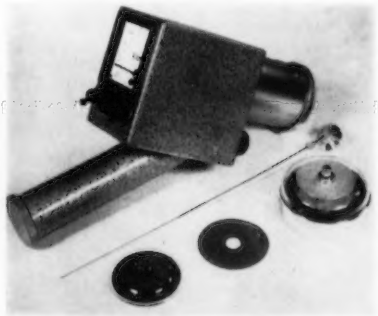

Instrument for Static Detection, Measurement

A new portable instrument for detecting and measuring static electricity charges is now available through United States Radium Corp.

The Statometer, designed for instant measurement of static not only indicates the existence of static but also pinpoints the area of disturbance, enabling installation of appropriate static eliminators.

The instrument, with a measuring range of 0-500,000 volts, is built around a chamber which ionizes the air in the vicinity of the static disturbance, permitting a sample charge to be conducted to the instrument, where it is measured. Optional attachments for the compact, hand-held device make measurements in inaccessible areas practicable, while other attachments make the Statometer more sensitive in certain areas of application.

Possible applications of the Statometer to date include use in the printing, plastics and paper industries.

For additional information, write United States Radium Corp., Morristown, N. J.

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What a 'killer' this complex chemical is turning out to be! And quite impartial as to its victims: — houseflies, barnflies, fruitflies, aphids, mites, ants, beetles, chinch bugs, roaches, and many other pests that bother man and beast. It kills them dead!

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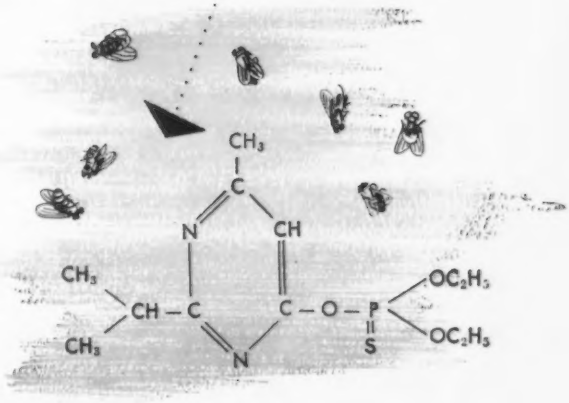
Sulphur, often called one of the Four Pillars of the Processing Industry, is benefiting mankind in many ways. None is more important than that of controlling crop-destroying pests.

**A product of the Geigy Chemical Corporation.*



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- Spindletop, Texas
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Fracture Resistant Ductile Iron Diaphragm Valves

A new line of ductile iron diaphragm valves has been announced by Hills-McCanna Co. This line has been developed to meet an industry-wide requirement for a diaphragm valve with exceptional strength and resistance to fracture and thermal shock.

According to the manufacturer, valves cast of this material have the tensile strength of cast steel and approach the economy of cast iron as well. The inherent toughness of ductile iron provides a diaphragm valve with high resistance to impact damage as well as thermal shock, satisfying the safety requirements of industry.

Hills-McCanna ductile iron diaphragm valves are available as complete valves or replacement components of bodies, bonnets and handwheels and are available with screwed ends (½ in.-3 in.) and flanged ends (½ in.-8 in.).

For complete information on this new fracture resistant valve, contact Hills-McCanna Co., 2358 W. Nelson St., Chicago 18, Ill., requesting Bulletin #102.

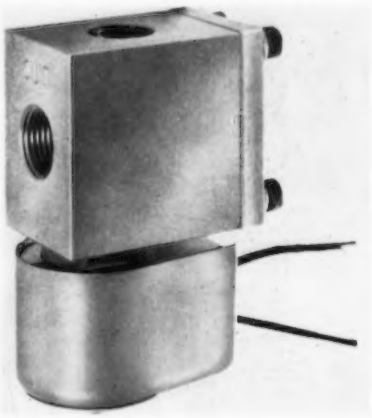
Fractional-Hp. Severe-Duty Motor Line

A new Form G severe-duty, single phase 60 and three 60/50 cycle motor line has been introduced by General Electric.

The new motors have been especially designed for applications where operating conditions are abnormal. Typical instances in this category include the powering of equipment where motors are hosed down on a regular basis, and motor installations which do not require the explosion-proof feature. Cited as new features of these motors were: totally enclosed non-ventilated construction, base welded to stator shell, stainless steel shaft, cast-iron and shields, and corrosion-resistant finish on both internal and external surfaces.

Stator windings on all models of the new line are protected by special insulation and double varnish impregnation. Splashproof capacitor construction is featured on all models equipped with capacitors. The new motor is available in horsepower ratings of 1/6 through ¾ and in speeds of 3450, 1725 and 1140 r.p.m.

Write General Electric Co., Schenectady 5, New York for further information.



High Pressure Solenoid Valve

A new two-way high pressure solenoid valve is now available from the Automatic Switch Co., Florham Park, N. J.

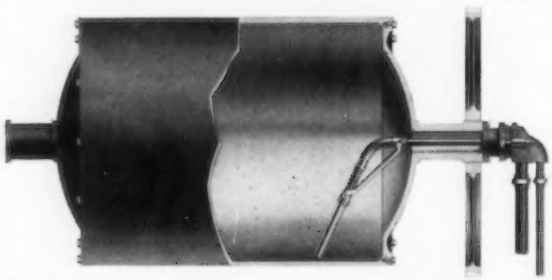
Especially suited for hydraulic applications, such as hydraulic lifts and elevators, these heavy duty constructed valves are designed for tight shut-off on pressures to 1500 p.s.i. They may be mounted in any position without affecting operation.

These solenoid valves are of the internal pilot operated piston type having angle bodies, available in either stainless steel or brass bar stock with teflon discs and stainless steel magnetic parts. Normally closed operation only.

Valves may be supplied for continuous or intermittent service, depending upon the application.

Available in ½-in. or ¾-in. pipe connections and with general purpose, water-tight or explosion-proof solenoid enclosures.

For complete details, including prices, ask for brochure on "Bulletin 8223."



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The Midwest Auto-flex Syphon features a spring and brace that holds the end of the pipe at the proper distance from the bottom of the dryer. The pipe cannot possibly take any other position —hence, proper water and air removal.

The cantilever leverage exerted is less than half that exerted by bent pipe syphons. In the Midwest, the pipe clears the dryer and creates no drag on the journal. Fits all steam joints and remains effective at low as well as at high operating speeds.

Order a few for trial and quit worrying about syphon troubles.

ROSS MIDWEST FULTON CORP., Dayton, Ohio, U.S.A.

Subsidiary of J. O. Ross Engineering Corp., New York, N. Y.

Representatives:

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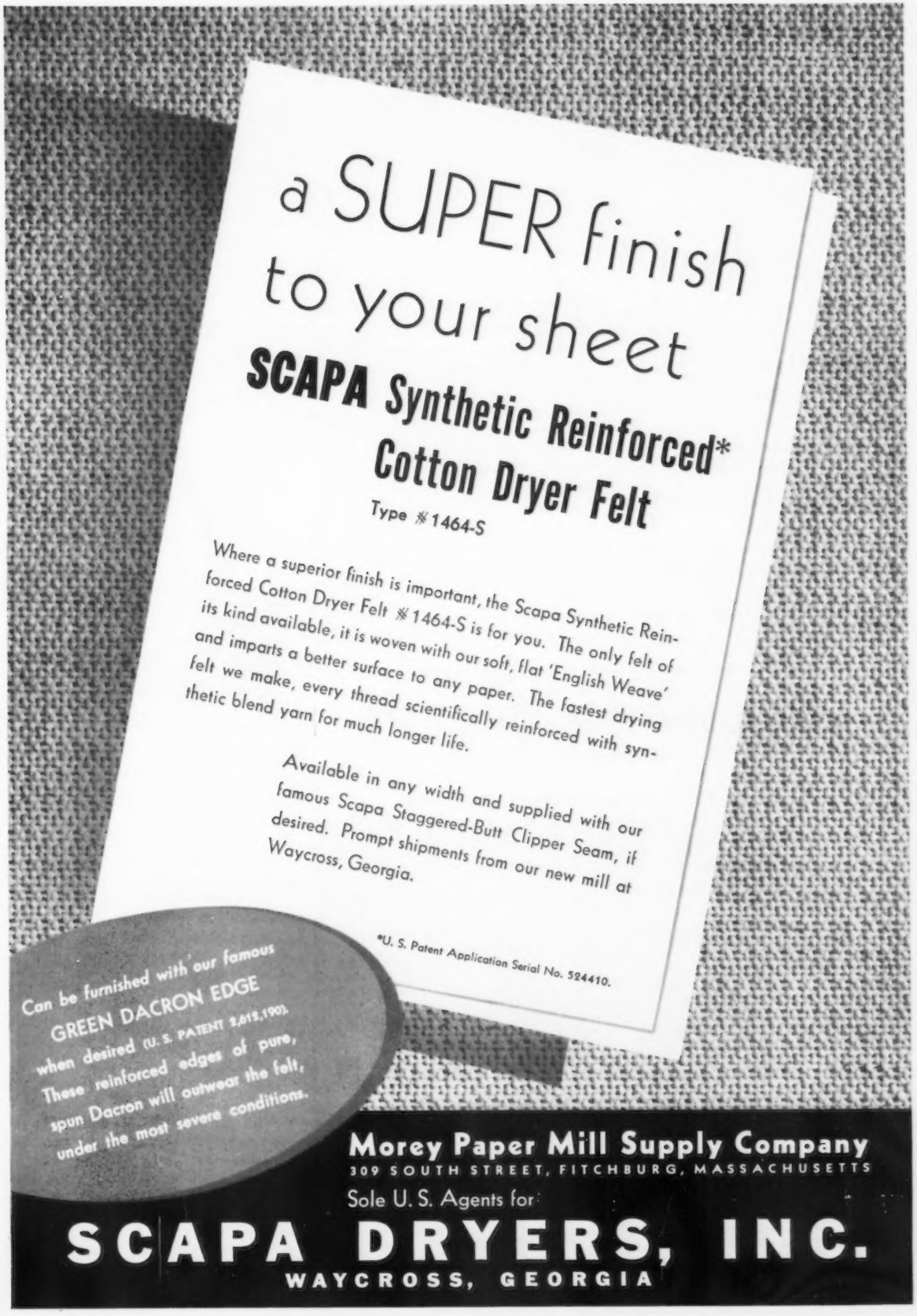
Ross Engineering of Canada Limited, Montreal.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Where a superior finish is important, the Scapa Synthetic Reinforced Cotton Dryer Felt ✳1464-S is for you. The only felt of its kind available, it is woven with our soft, flat 'English Weave' and imparts a better surface to any paper. The fastest drying felt we make, every thread scientifically reinforced with synthetic blend yarn for much longer life.
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Pulpwood Fork Attachment

Increasing the production and versatility of Caterpillar No. 955 and No. 977 Traxcavators in woods operations are new pulpwood forks.

In announcing the new attachment, Caterpillar Tractor Co., Peoria, Ill., notes that the tools are designed to grasp a full load of pulpwood and hold it firmly while transporting.

The No. 955 Traxcavator pulpwood fork is designed to handle eight-foot lengths of pulpwood with weights up to 5,000 lbs. (1.1 cord). Tine spacing is 60 in. center-to-center, with over-all width of the fork 63½ in. When the fork is raised to the horizontal position, the forward reach of the No. 955 is 104 in. in front of the bumper.

The fork for the No. 977 Traxcavator is designed to handle 16-ft. lengths of wood up to 8,500 lbs. (1.9 cord). Tine spacing is 75 in. center-to-center, with over-all width of the fork 80 in. With the lift arms of the No. 977 in the horizontal position, forward reach ahead of the bumper is 110 in.

Vertical Weather-Protected Motor Enclosure

Vertical weather-protected motors with enclosures built to NEMA Type II standard are now available from Allis-Chalmers in squirrel-cage and wound-rotor induction and synchronous types in ratings of 250 hp. and up.

Designed for outdoor applications on pumps and other vertical drives, the new motors' ventilating passages are constructed to minimize the entrance of rain, snow and airborne particles with baffles to direct the flow of air in and out. Intake and exhaust openings to air chambers are arranged so high velocity air blown into the machine will circulate through and be discharged without entering the internal vent passages leading to electric parts.

Baffles force incoming air to abruptly change its direction—90 degrees or more — before reaching the motor's electric parts. To further assure that moisture or dirt particles will drop out before reaching internal parts, air velocity into the machine is less than 600 r.p.m.

Filters are optional on Allis-Chalmers weather-protected machines. A permanent wire-mesh type is used, when specified, and filter sections are readily accessible for inspection and maintenance.

These motors are described in new literature, Bulletin 05R8685, available from Allis-Chalmers Manufacturing Co., Milwaukee 1, Wis.

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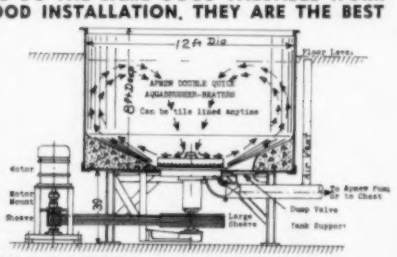
HIGH WET STRENGTH (COTTON CONTENT) MAP PAPERS. **3,000 POUND BATCHES DEFIBERED AND BEATEN-OFF in *THIRTY MINUTES* using 100 H.P. Motor, in APMEW HIGH DENSITY (7.1%) DOUBLE QUICK AQUABRUSHER BEATERS. WE GUARANTEE THEM TO DO THE SAME GOOD VALUABLE WORK IN YOUR MILL with the USUAL GOOD INSTALLATION. THEY ARE THE BEST OBTAINABLE.**

ONE MILL SAVED: 150 H.P. DAILY ($7,500.00 YEARLY), THREE BEATER MEN ($9,000.00 YEARLY) FIBRE SHRINKAGE ($28,800.00 YEARLY) ALSO BEATS UP TWO HUNDRED POUND BATCHES or SMALL BATCHES WHEN NEEDED.

USUALLY USES ONE FOURTH THE POWER of Beaters and Pulpers. OBSERVE THEM WORKING.



DOZENS OF REPEAT ORDERS ALREADY. *QUICK DELIVERIES of ONE WEEK.* 363 PATENTS.

APMEW, Inc., P.O. Box 1, Glens Falls, N. Y.

Forgetful?

A brand new "Pocket-Planner" system for organizing your work, keeping records of appointments and expenses, is now available to all busy people who are "on the go." Permits you to record notes systematically so you are reminded of important details in proper chronological order. Eliminates "mental notes."

A complete Pocket-Planner set consists of a leather pocket secretary, 12 indexed monthly diaries, 12 monthly expense cards, and a sturdy file box. Each individual monthly diary is 3½ by 6 in. and has a day-by-day index that permits you to locate any page with a flip of the finger. Each month you slip the proper diary into the secretary and take it everywhere you go.

You can order Pocket-Planner sets to start with any month of the year and continue for 12 consecutive months. Sets are available with top grain cowhide secretary at $11.75; with imported morocco secretary at $12.90; with genuine pigskin secretary at $13.50. Quantity prices are available. Prices include federal excise tax. Shipped prepaid.

Write to Regency Crafts, Inc., 520 Fifth Ave., New York 36, N. Y.

Spraying Glauber's Salt at Searles Lake, vast natural source of Salt Cake

World Leadership in SALT CAKE

You can count on TRONA to supply your expanded kraft production needs for high purity Sodium Sulphate and Sodium Chlorate. TRONA is basic in both. Salt Cake, from the rich natural brines of Searles Lake, is keeping ahead of production curves wherever high quality kraft paper is produced.

If your interest lies in the SOLVAY high-stage chlorine dioxide pulp bleaching process, you can depend on TRONA* Sodium Chlorate from our large electrochemical facilities at Henderson, Nevada.

Expanded Production of SODIUM CHLORATE

For '58—A New Sodium Chlorate Plant at Aberdeen, Mississippi.

Looking to the future, AP&CC is building a new $5 million Sodium Chlorate plant, with initial production of 15,000 tons per year, at Aberdeen, Mississippi, to serve the expanding Southern pulp industry. When completed in mid-1958, this plant will mark the emergence of American Potash & Chemical Corporation as the largest producer of $NaClO_3$ in the Western Hemisphere.

Electrolytic cells at Henderson

TRONA*

American Potash & Chemical Corporation

3030 West Sixth Street, Los Angeles 54, California

LOS ANGELES • NEW YORK • ATLANTA • SAN FRANCISCO • PORTLAND (Ore.)

Export Division: 99 Park Avenue, New York 16, New York

*Trademark AP & CC

Producers of: BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM • BROMINE • CHLORATES PERCHLORATES • MANGANESE DIOXIDE and a diversified line of specialized agricultural and refrigerant chemicals.

during the
last 18 months
EXTREMULTUS
BELTING
has been
installed in
130
of the nation's
leading
paper mills

THESE ARE A FEW OF THE REASONS:

- Freedom from stretch eliminates take-up
- Widths a small fraction of the belts replaced
- Speeds up to 10,000 feet per minute
- Unexcelled shock and vibration absorption
- Ratios as high as 20:1 at contact arcs of 90°

for full details, write
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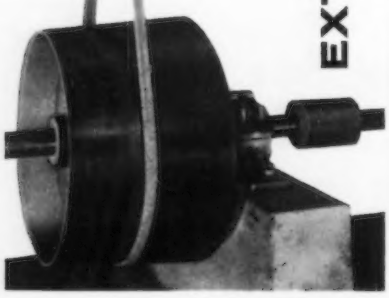


Radical Concept in Industrial Lift Trucks

Automatic Transportation Co. has designed and manufactured a fork lift truck that will lift 10 feet without a mast—claimed to be an entirely new concept of design and engineering in this field.

A heavy duty truck, the Elbolift has a lifting capacity ranging from 12,000 to 20,000 lbs. By eliminating the heavy mast assembly the manufacturer was able to save thousands of pounds from the overall weight and gain greater visibility because there are no rams or uprights to interfere with the driver's vision. Its excellent maneuverability has been proven, operating easily through a 78-in. boxcar door and in a 13 ft. 8 in. right angle aisle.

The truck has a narrow overall width of 48 in. with two 16-in. wide tires providing good load distribution and stability. In addition to its wide tires, load stability has been further insured by the introduction of a built-in load retraction feature and the low slung position of the battery and counterweight.

Safety was not overlooked in the design of the new lift truck. The driver is well protected on the sides by the counterweight and in the rear by a heel plate. A dead man control automatically applies the brake and returns the controller to neutral when the driver dismounts.

The truck is most versatile in its load handling ability. It is equipped with manually adjustable forks as standard equipment; however, hydraulically adjustable forks, side shifter, and ram may be obtained as single or combination attachments for use in handling dies, pallets, platforms, and coils.

A two-color four-page brochure with specification sheets are available upon request from Automatic Transportation Co., 149 W. 87 St., Chicago 20.

Improved Saran Lining

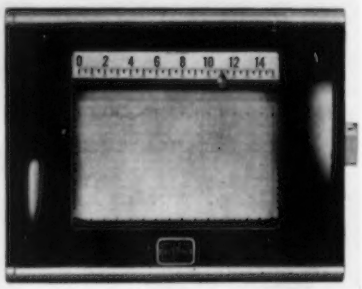
Dow Chemical Co. has developed a new saran lining for pipe, valves, pumps and fittings used by industry in handling corrosive liquids and gases.

In addition to having saran's singular immuity to chemical and abrasive attack, the new gray lining has a 50 per cent reduction in its coefficient of thermal expansion. It therefore expands and contracts to approximately the same degree as its steel casing. This makes possible its use in a wider range of temperatures.

According to the manufacturer operations from well below zero up to 200 deg. F. can be handled by the new lining without damage. Field tested for 18 months under extreme variations in temperature, the lining also shows improved impact resistance.

Complete saran-lined piping systems now are possible with the recent introduction of saran-lined centrifugal pumps.

Distribution will be handled by the Saran Lined Pipe Co., Ferndale, Mich. Manufactured by Dow Chemical Co., standard stock sizes of pipe, valves, pumps and fittings with the new lining are available from inventory.



Electronic X-Y Recorder

A new Electronic Dynamaster X-Y recorder has just been announced by Bristol Co. The new strip-chart recorder will automatically plot a continuous curve showing the relationship of one measured variable to another.

Some typical uses for the instrument include plotting temperature versus pressure in the process industries, location on web versus thickness in paper making, and speed versus torque in motor operation. Most other variables can also be handled.

The Dynamaster records on a 12-in. strip chart, and is available in pen speeds up to 0.4 seconds for full scale traverse to follow the most rapidly changing variables. Standard accuracy is 0.25 per cent.

Additional information is available from Bristol Co., Waterbury 20, Conn.

NEWS OF SUPPLIERS

M. T. Gilkison

H. F. Brown

Gates Rubber Co., Denver, Colo., has appointed Mark T. Gilkison manager of its Industrial Sales division.

Assistant manager of the Industrial Sales division for the past eight years, he fills a vacancy left by L. L. Carroll who is taking sales duties for Gates on the West Coast.

Lockport Felt Co. has announced that Vice President Howard F. Brown's attention will be concentrated on customer service. Mr. Brown's new title is Vice President in Charge of Manufacturing Service.

Mr. Brown will supervise Lockport's staff of technical service representatives, and an augmented program of field service, "on-the-job" assistance to producers of paper, board, pulp, roofing paper and asbestos cement board.

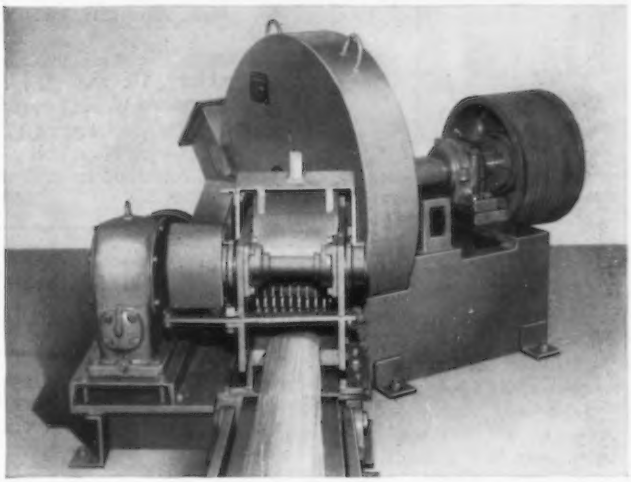
Acme Paper of Ohio has appointed John Fencyk vice president and general manager of new plant in Cincinnati. Acme buys waste paper for processing and resale to paper mills.

Askania Regulator Co., Chicago, has appointed Werner G. Holzbock to the post of chief engineer. He formerly was chief development engineer of the organization, a manufacturer of industrial controls. James Kogen assumes Mr. Holzbock's former position.

Dorr-Oliver Inc. has appointed M. N. Dannenbaum Co. of Houston, Texas and Brown & Morrison of Charlotte, N. C. as exclusive pump representatives in their respective areas. Both organizations will handle the complete line of D-O pumps for the chemical and process industries.

Corn Products Refining Co. has appointed Michael D. Mullin assistant to the general sales manager. Previously, he was assistant to the Central Division sales manager and branch manager of the Milwaukee sales office, a position he assumed in 1954.

Uniform, Clean-Cut Chips from "Waste" Wood



Carthage Slab Chipper

You get high-quality chips from slabs, edgings and small rounds, hard or soft wood, with a Carthage 39" Slap Chipper. With power feed synchronized with the cutting speed, this new chipper produces uniform, clean-cut chips which are exceptionally free from bruising.

Horizontal feed spout simplifies handling of long slabs and permits "automated" chipping when fed by the discharge conveyor from the Carthage Slab Barker.

Heavy feed fingers at the disc hold down and align short ends. Safety bar prevents entrance of oversize material. Feed stops automatically if spout is accidentally jammed. Capacity 3 to 5 cords per hour.

Write for Bulletin 39-1

●

Complete the Job with a Carthage Slab Barker and a Carthage-Dillon Chip Screen.

Ask Your Carthage Representative

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Tidewater Supply Co., Inc.
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Carthage Machine Co.
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1645 Boulevard Edouard Laurin
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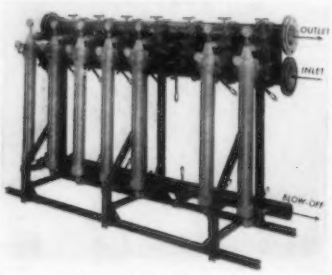
CARTHAGE MACHINE COMPANY CARTHAGE, NEW YORK

RONNINGEN FILTERS
stop Dirty Fluids from entering your Plant



Ronningen Model 208 Multiplex Filter with one unit removed from line for service . . . and all the others can continue to operate.

For continuous uninterrupted service — USE RONNINGEN MULTIPLEX FILTER SYSTEMS, automatic or manual. Capacities to 3000 GPM. Various metals available to resist corrosion. All are quick-coupling—nonshort circuiting. Sealed both ends. Each unit can be back washed and blown down in 5 seconds.

Write for Bulletin 954J

STRAIN AGAIN WITH RONNINGEN
"Particles large or small, we filter them all"

RONNINGEN-PETTER Co.
Vicksburg, Michigan
Phone Midway 8-5161
Representatives throughout U.S. and Canada

always in the market

pioneer paper stock company
graders and packers of waste paper

OBITUARIES

George W. Dodge, 77, for nearly 13 years a consulting engineer with the Hoble & Wood Machine Co., died September 21 at his home in Hoosick Falls, Mass., after an illness of some months.

His entire life was devoted to the paper industry. He was chief engineer for the American Writing Paper Co. at Holyoke, Mass., and later the International Paper Co. in New York City. His engineering contributions to the field of papermaking were many and noteworthy, both in production and design.

Eugene B. Kardon, 41, president of the United Container Co., Philadelphia, Pa., died September 28 at Graduate Hospital, Philadelphia, after a short illness.

Mr. Kardon also was vice president of the Blems Corp., vice president of the Philadelphia Container Co., secretary of the Kardon Box Co., president of the Leroy Paper and Stock Co., secretary of the E. J. Schoettle Co., and treasurer of the Morris and Sophie Kardon Foundation.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1957	Aug. 24 91.8	Aug. 31 89.2	Sept. 7 71.1	Sept. 14 90.9r	Sept. 21 90.8
1956	Aug. 25 96.9	Sept. 1 97.0	Sept. 8 76.8	Sept. 15 98.8	Sept. 22 100.7

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	93.9	96.5	96.6	93.3	93.6	92.5‡	74.9‡	90.5‡					
1956	**99.6**	**102.6**	**102.9**	**102.5**	**101.8**	**99.9**	**85.6**	**96.7**	**94.3**	**99.5**	**97.6**	**90.9**	**97.9**

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1950	1951	1952	1953	1954	1955	1956	1957
Year to Date	95.2	99.6	90.4	92.8	91.3	94.5	98.2	91.1
Year Average	95.8	98.0	88.6	92.3	91.6	94.9	97.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

1957	Aug. 24 95	Aug. 31 95	Sept. 7 72	Sept. 14 98	Sept. 21 96
1956	Aug. 25 94	Sept. 1 95	Sept. 8 71	Sept. 15 97	Sept. 22 94

COMPARATIVE MONTHLY SUMMARIES

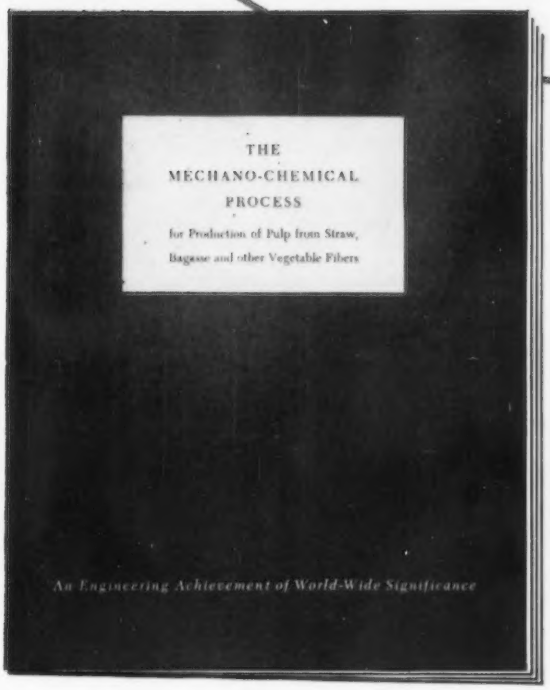
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	91	94	94	92	93	91	72	94					
1956	100	100	99	100	99	98	77	95	89	96	93	84	94

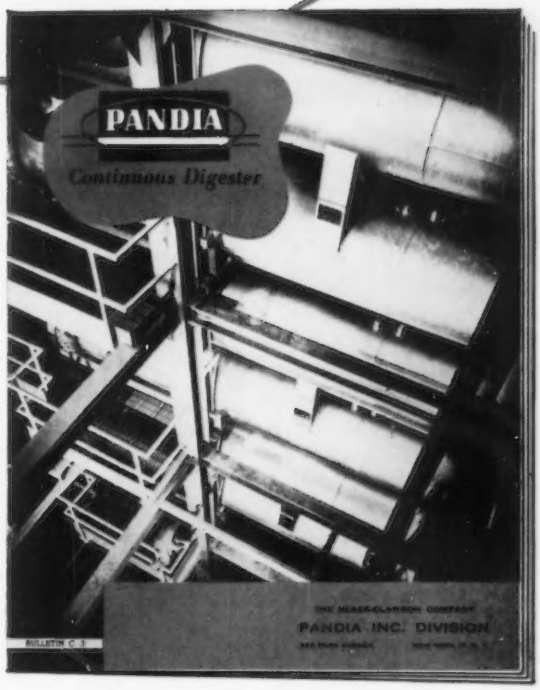
† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Sept. 25, 1957	LAST WEEK ENDING Sept. 14, 1957	CUMULATIVE TO DATE Jan. 1 to Sept. 25, 1957
% Activity	96%	98%	91%
	Tons	*Tons*	*Tons*
Total Production	296,404	299,482	10,167,502
Liner	98,833	103,652	3,486,095
Corrugating Material	46,128	45,108	1,549,254
Chip & Filler Board	5,674	4,662	199,245
Total Containerboard	150,635	153,422	5,234,594
Folding	53,594	56,902	1,877,691
Set-Up	12,431	12,342	414,796
Special Food Board	25,514	24,767	902,416
Other	54,230	52,049	1,738,005
Total Boxboard	145,769	146,060	4,932,908
Total Orders	*Tons*	*Tons*	
Received	259,955	265,697	
Unfilled End of Week	465,246	504,557	

Which pulping process best fits your needs?





The answer hinges on the raw material to be pulped, the type and quantity of the finished product you intend to manufacture, and many other complex factors.

These two booklets explore the respective merits of two new processes: *The Mechano-Chemical Process for Production of Pulp from Straw, Bagasse and Other Vegetable Fibers,* describes the Hydrapulper Digestion Method and contains 7 samples of papers made by this process. *The Pandia Continuous Digester* explains the new technique of continuous cooking.

We furnish equipment for these two excellent pulping methods—*or for any other process which meets your requirements.*

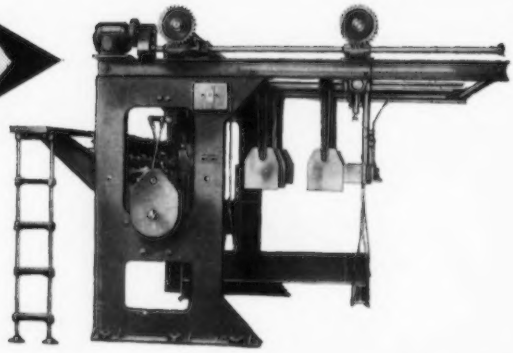
In these helpful booklets you will find clear-cut facts on which to base your choice of pulping methods. Send for your free copies today.

THE PARSONS & WHITTEMORE / LYDDON ORGANIZATION

World Leaders in the Development of Pulp Mills for the Use of Bagasse, Straw or Other Vegetable Fibres

250 Park Ave., New York 17, N. Y. **18/19 Savile Row, London W.1., England**

HAMBLET ELECTRICALLY OPERATED LAYBOY



BUILD PROFITS with HAMBLET

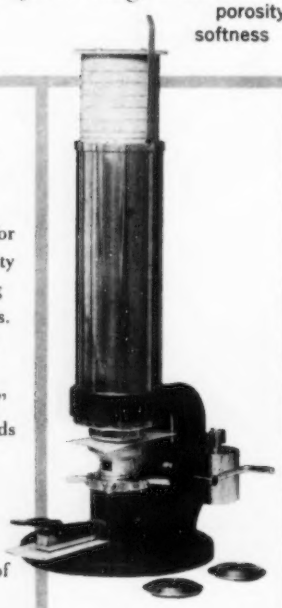
* SINGLE & DUPLEX CUTTERS
* ELECTRICALLY OPERATED LAYBOYS
* BACK STANDS

WRITE FOR FREE CATALOGUE

HAMBLET MACHINE CO.
LAWRENCE, MASSACHUSETTS

WRITE FOR CATALOG TODAY!

1 INSTRUMENT *for Testing* smoothness porosity softness



Simply interchanging the lower test plates of the Gurley-Hill S-P-S Tester converts this instrument for testing smoothness, porosity or softness of any printing and most industrial papers. Meets TAPPI and ASTM "Suggested Method for Determining Smoothness," as well as standard methods for finding air resistance or porosity.

Write for Bulletin 1400, describing complete line of Gurley paper testers.

W. & L. E. Gurley, *520 Fulton Street, Troy, N.Y.*

Westvaco Quality Papers

Westvaco manufactures a wide range of high quality paper products—from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality—Westvaco's guarantee of top performance.

Printing Papers . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

Writings . . . Bond, mimeo, duplicating, ledger.

Bristols . . . Index, post card.

Converting Papers . . . Label, tablet, envelope, lining, file folder, tag, tabulating card, coating raw stock.

Bleached Boards . . . Cup, milk bottle, folding boxboard, frozen food container.

Kraft Papers . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

Containerboard . . . Linerboard and corrugating medium.

Market Pulp . . . Bleached and unbleached sulphate.

West Virginia Pulp and Paper Company
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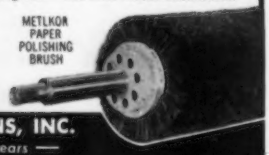
35 East Wacker Dr., Chicago 1, Ill. • 503 Market St., San Francisco 5, Cal.

BRUSH CASUALTIES had him in a spin!

He had paper mill panic, due to substandard brushes beat-up bristles, downtime delays, etc., — Now his problems are solved . . . he's saving time and money with economical Jenkins' METLKOR brushes . . . they do a better job and last longer.

Specify Jenkins' METLKOR — the original — the best Metal-Core Brush

METLKOR®
CYLINDER BRUSHES and LIFEWOOD® WOOD BACKED BRUSHES



M. W. JENKINS' SONS, INC.
— Serving Industry for 80 Years —
141 Pompton Ave., Cedar Grove, Essex County, N. J. CEnter 9-5150

*Microlyzed** JORDAN **FILLINGS**
Your Quality Guarantee

BOLTON EMERSON

LAWRENCE, MASSACHUSETTS
Send for Bulletin F-556 *T.M. APP. FOR

Dilts LIGHTWEIGHT EXPANDING CHUCK

Cuts Roll Shaft-up Time by 50%

REDUCES CORE DAMAGE

HOLDS WITHOUT SLIPPING

Easy to Handle • Simple to Operate • Prevents Damage

. . . chuck holds roll concentrically—grips core on inside and transmits full braking torque without slippage

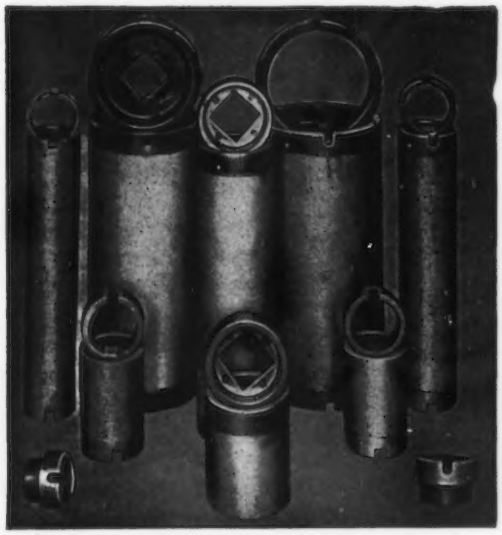
Standard Sizes—3"—3½" and 4" core I.D. to fit 1⅛" thru 2⅜16" round shafts and 1¼" square shafts. (High Tensile Aluminum)

5"—6" core I.D. to fit 2⅜16" thru 3⅝16" round shafts. (Malleable Iron)

Write for specification sheet 102A or place order direct.

THE BLACK-CLAWSON COMPANY

DILTS DIVISION • FULTON, N. Y.



ELIXMAN

CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

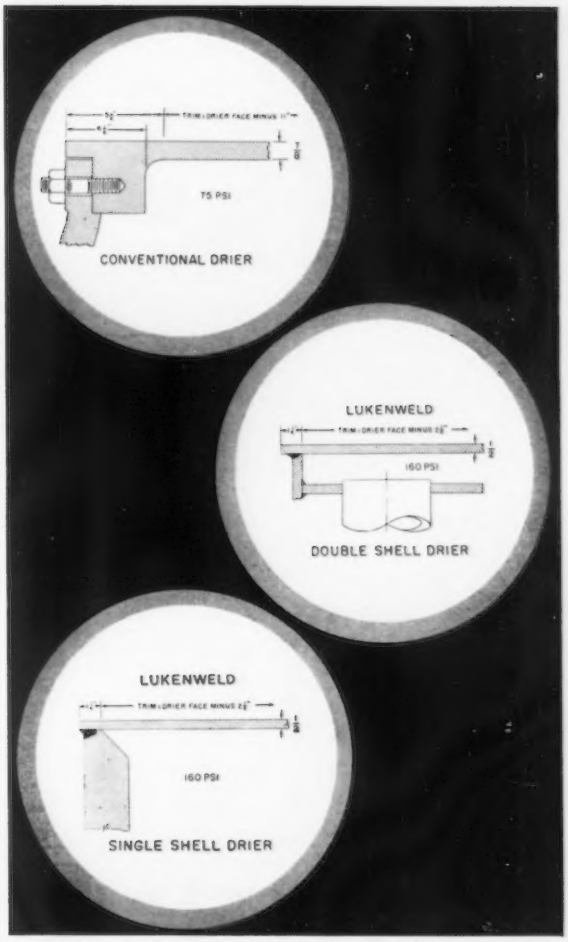
Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.



More Safety, Less Maintenance with Welded Steel Driers

Compare these 42" x 120" driers. Note the solid, all-welded construction of the Lukenweld rolls—the absence of bolted-on end heads, and the reduced shell thickness.

With Lukenweld high-strength rolls, there are no heads to crack, no gaskets to blow. Maintenance costs are cut. Heat transfer is improved. There is more drying surface.

Lukenweld driers can be built to take pressures well over 200 psi and are furnished *in any size*, subject only to shipping limitations.

GET THIS NEW BOOKLET

New illustrated booklet, WELDED STEEL DRIER ROLLS, gives you valuable information. Write Lukenweld, Room 944.

LUKENWELD

A DIVISION OF LUKENS STEEL COMPANY

COATESVILLE, PENNSYLVANIA

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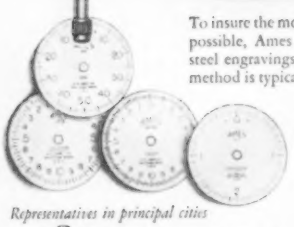
AMES

...the preferred Dial Indicators

dials are printed from steel engravings only!

To insure the most accurate and legible graduations possible, Ames Dial Indicators are printed with steel engravings exclusively. The use of this costly method is typical of Ames' insistence on maximum precision in every detail. It explains why the lifetime cost of Ames Dial Indicators is lower, and why so many quality control engineers specify Ames as *"preferred"*. Write today for complete information.



Representatives in principal cities

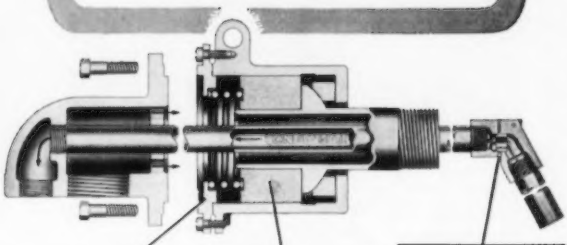
B.C. AMES CO.

55 Ames Street, Waltham 54, Mass.

MANUFACTURERS OF MICROMETER DIAL GAUGES • MICROMETER DIAL INDICATORS

Johnson Joint

SELF-SUPPORTED TYPE with SYPHON ELBOW



ASSEMBLY PLATE — Holds internal parts in position when head is removed.

SELF-SUPPORTING — Needs no external supports of any kind.

SYPHON ELBOW — Permits use of straight pipe for syphon. Can be inserted or withdrawn right through the joint.

WRITE FOR INFORMATION

Bulletin S-2001 has all the facts on this joint-and-elbow combination that supports itself, has no packing, needs no lubrication, outmodes unwieldy syphon pipes. Johnson Joints are also available in pipe-supported and rod-supported types, to suit all operating needs.

The Johnson Corporation

828 Wood St., Three Rivers, Mich.

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MODEL 300 EXTRA HEAVY DUTY KNIFE GRINDER

For CHIPPERS and HEAVY SHEAR BLADES

Fast and Heavy Cuts with Extreme Accuracy

Massively designed to meet the heaviest knife grinding requirements. Standard equipment includes 26" diam. Segmental Grinding Wheel, Heavy Duty Precision Spindle, 25 HP TEFC Motor, Hydraulic Table Drive, 8 x 8 four sided Swiveling Knife Bar, Automatic Force Feed Oiling, Wet Grinding System, Wheel Dresser and Heavy Guards. Optional equipment includes larger grinding heads, larger knife bars or magnetic knife bars, and special fixtures. The Model 300 may also be furnished with a flat T-Slotted Table, with or without knife bars.

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SAMUEL C. ROGERS & CO., INC.

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Automatic **LUNKENHEIMER OILERS** eliminate costly hand labor!

Fig. 1834 Constant Level Oil Control

Fig. 1815 Globe Body Bottle Oiler

Labor costs are far too high to permit economical hand-oiling—yet valuable bearings must be protected against damage! Install Lunkenheimer Bottle Oilers, Oil Cups, or Constant Level Oil Controls to feed oil automatically—prevent over-supply, leakage, spatter. Request literature from your Lunkenheimer Distributor or write The Lunkenheimer Co., Box 360, Annex Station, Cincinnati 14, Ohio.

Fig. 1300 Sight Feed Oil Cup

L-257-39

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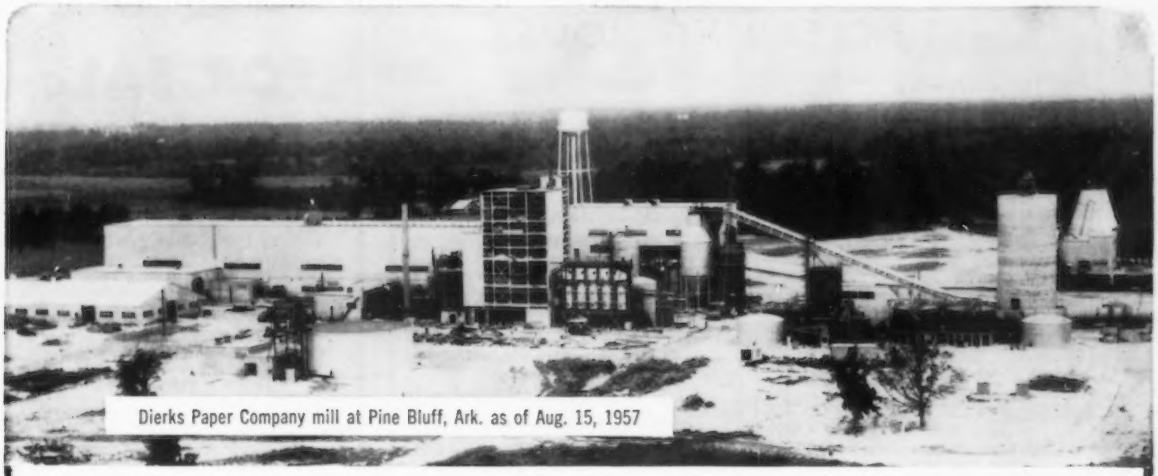

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New Dierks Paper Plant nearing completion!

Dierks Paper Company's new mill is scheduled for
Fall production of quality unbleached kraft paper and liner board.
Tonnage from this mill is now being offered.

We will appreciate an opportunity to serve you.

Dierks Paper Company | Frank M. Johnson, Sales Manager
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PAPER TRADE JOURNAL / CLEARING HOUSE

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Manager for kraft and sulphite pulp and paper mill: superintendent Cylinder wet machine mill: and many others.

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INDUSTRIAL ENGINEER WANTED

Graduate Industrial Engineer with practical experience in the paper industry. A knowledge of paper finishing is desirable. Should have ability in organization, expansion, mechanization and labor relations. Under 38 years of age, good salary and benefits. Fine opportunity for a man who is energetic and desires a challenge. Send detailed resume of experience and education to

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For assistant to Technical Director. Work on quality control and process development. Age under 35. Salary open. Experience desirable but not essential. Indiana location. Reply Box 57-265, Paper Trade Journal. 0-7

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Experienced Designers, Draftsmen for design and installation of Pulp and Paper manufacturing machinery in large expanding and progressive mill. Usual benefits with excellent opportunity. Send detailed resume to

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SCIENCE GRADUATE with several years experience in Fourdrinier paper making. Work involves development and production of specialty paper making. Age-open. Advancement based upon merit. Starting salary based on training and experience. Location in Minnesota provides easy access to nation's outstanding hunting and fishing areas. Address Box 57-258 care Paper Trade Journal. NC

Help Wanted

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$5,000 to $50,000

SALES—PRODUCTION—TECHNICAL

Top mills, converters, and jobbers from Coast to Coast badly need qualified men at every level. Choice spots open in pulp, board, coarse, fine, folding, corrugated multi-wall bags, transparent packaging and paper specialties of all kinds.

I am a paper man myself. If your record of performance entitles you to increased responsibility and greater potential, I can and will help you to attain it. You may contact us in absolute confidence.

GEO. M. SUNDAY & ASSOC.
Personnel Consultants to the Paper Industry
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Large completely integrated Kraft Paper Mill in Florida seeking graduate:

Mechanical Engineer with minimum of 5 yrs. experience; Project Chemical Engineer with 3 to 5 yrs. experience for Mill Operating Problems; Chemical Engineer—Research and Development; Chemists—No prior experience necessary.

Please submit detailed resume of experience, education, and salary requirements, and personal data. Replies will be held in strict confidence to Box 57-277 care Paper Trade Journal.
0-14

HELP WANTED

Retired pulp and paper mill supervisory personnel in major producing areas (Lake States, South East, South West, North East, etc.) for interesting part time work. No selling, demonstrating or servicing involved. Apply to Box 57-250 care Paper Trade Journal.

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FOR NEW ONE HUNDRED TON PULP AND PAPER MILL NOW NEARLY COMPLETED IN CENTRAL AMERICA—NEW SPECIAL 158 INCH RICE-BARTON FOURDRINIER PAPER MACHINE—EXCELLENT OPPORTUNITIES—TOP SALARIES—U. S. TAX EXEMPT—PLEASANT HEALTHY LIVING CONDITIONS—NEAR BEAUTIFUL LARGE BEACH RESORT AND AMERICAN COLONY—PLEASE SUBMIT RECORD OF TRAINING AND EXPERIENCE—ALSO PLEASE BE SURE TO STATE SALARY DESIRED AND INCLUDE TELEPHONE NUMBER IN FIRST REPLY—ALL REPLIES HELD IN STRICT CONFIDENCE.

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CONTENTS OF NIAGARA FALLS, N. Y. MILL OF CERTAIN-TEED PRODUCTS CORP.

6—Dilts 1500# Iron Tub Beaters
2—N&W Mamouth Jr. and Monarck Jordans
2—Impco 12 Plate Flat Screens with Dunbar drives and S.S. Braemer Controls
4—Triplex Stock Pumps
1—47" Carthage 4 knife Chipper

100" SINGLE CYLINDER MACHINE

WET END SECTION

1—Single cylinder wet end consisting of a Downingtown Iron End Vat, Cylinder 48" dia. x 99½" face, Rubber Covered Couch Roll 18" dia. x 104" face. Both the Cylinder and Couch are anti-friction bearing equipped. There is also a felt guide, Broughton Shower and a spare cylinder and spare couch roll.

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1—Sandusky Suction Press Roll 14 9/16" dia. x 104" drilled face.

PRESS SECTIONS

2—Complete press sections. Each section has a top press roll 18" dia. x 98½" face Stainless Steel Metalized and the bottom rolls are 18" dia. x 98½" face Rubber Covered. These sections are complete with Lodding Doctors, felt carrying rolls and each is driven by a Falk totally enclosed right angle drive rated at 6 HP, 6.236-1 Ratio. Also included are four spare press rolls.

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1—24" dia. x 94½" face lead dryer
41—48" dia. x 94" face dryers
This section is complete with two deck frames, gears, bearings, steam joints and 14 Lodding Doctors. These dryers were all in operation at 54# steam pressure.

CALENDER STACK

1—94" face Six Roll Stack of the Open Way Type. The bottom roll is 16" dia., two rolls are 12" dia. and three rolls are 7" dia.

REEL

1—Downingtown Two Bowl Reel which will accommodate 60" dia. rolls.

SLITTER AND REWINDER

1—Warren Two Drum Slitter and Rewinder which will rewind to 60" dia. This machine is equipped with six sets of shear cut slitters and is complete with D.C. variable speed motor drive.

DRIVE

1—Louis Allis Dynomatic Corp. 75 HP Variable Motor Drive 440/3/25 with adjustable Speed Motor Clutch 1400 rpm-200 rpm.
Complete line shafting with pulleys, pillow blocks, hangars, etc., along with all Right Angle Marshall Drives for the entire machine are available.

ALL OF THE ABOVE OFFERED INDIVIDUALLY

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BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs.
1—Bertram beater, roll 72″ dia. x 63″ face, hollow mid-feather, cast iron tub.

CALENDER STACKS
1—3 roll 30″ face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 roll 84″ calender stack.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 roll 82″ face.
1—5 roll 86″.

CHIPPERS
1—96″ Murray 4 knife Chipper—anti-friction bearings.
1—84″ 10 knife Carthage chipper-anti friction bearings.
24—Chipper Knives 15⅞ x 8¾, 2 slot.

CLASSIFINER
1—Dilts Classifiner, practically new.

CONVEYOR
1—Corrigan slush maker conveyor, 72″ wide.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill (18″ dia. rotor).

CYLINDER MOLDS
1—42″ diameter x 134″ face with anti-friction bearings.
2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
1—36″ diameter x 84″ face.
2—36″ diameter x 110″ face.
3—36″ diameter x 90″ face, 18″ diameter couch rolls.

DIGESTERS
1—Biggs 12′ 6″ (Globe).
Write us regarding your requirements.

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves horizontal—anti friction bearings, totally enclosed.
1—#6 Reeves vertical-anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1)
1—Farrel Birmingham enclosed drive, 200 H.P. anti friction bearings, 5.45 to 1, new equipment.
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive).
1—#4 Reeves Drive.
1—#4 Reeves Drive, totally enclosed, Class E, with 25 H.P. splash proof motor.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.).
3—Rice Barton enclosed drives, double reduction (14 to 1 one end, 4 to 1 other end).
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.

DRYERS
1—28″ diameter x 84″ face.
2—30″ diameter x 48″ face, with bearings.
2—30″ diameter x 40″ face, with bearings.
60—36″ diameter x 84″ face, complete with frames, gears & bearings.
4—48″ dia. x 52″ face with frames, gears, bearings.
4—28″ diameter x 80″ face with anti-friction bearing.
1—36″ diameter x 44″ face.
5—36″ diameter x 76″ face.
6—36″ diameter x 80″ face.
36—42″ diameter x 118″ face, complete.
22—28″ diameter x 40″ face with frames, gears and felt rolls.
1—16″ diameter x 54″ face (steel.)
1—48″ diameter x 66″ face.
1—60″ diameter x 89″ face, frames and bearings.
6—48″ diameter x 130″ face.
2—Cooling Drums, brass, 36″ x 128″, with frames, gears and necessary rolls to make up the unit. (After dryers)

DYNOFINER
"Rice Barton," details on request.

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—45″ Meadows 2 roll embosser.
3—62″ 2 roll embossers.

EXTRACTOR ROLL
1—Extractor roll, 26″ diameter x 104″ face.
1—Rice Barton & Fales, Extractor Roll, 26″ diameter x 104″ face.

FELT CONDITIONER
Write us regarding your requirements.

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72″ face x 5″ dia.

FLAT SCREENS
6—IMPCO—Dunbar 14 plate, bronze vats.
1—8 Plate "Packer".
1—12 Plate "Packer".

GEARS
Write us regarding your requirements.

HYDRAFINER
1—Dilts, stainless steel filling, anti-friction bearings, excellent condition.

HYDRAULIC PRESS
1—750 ton hydraulic pulp press.

JORDANS
1—Noble & Wood mammoth.
Write us regarding your requirements.

KNIFE GRINDER
1—Rogers 128″ knife grinder.

LABORATORY EQUIPMENT
1—Ball Mill
1—Electric oven (Williams Standard Pulp Testing Apparatus)
1—2′ Shartle Hydrapulper.
1—36″ Somat Pulping Machine.
1—Colloid mill.
1—6″ x 6″ sheet mold.
1—8″ x 8″ sheet mold.
1—8″ x 8″ sheet dryer.
1—12″ x 12″ sheet dryer.
1—Schopper fold tester.

LAMINATING MACHINES
1—72″ Beloit laminator, complete with drive.
2—84″ Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap.

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2—100 h.p. G.E. Upright—1180 r.p.m.
1—300 h.p. Slip Ring Motor—500 r.p.m.—Rebuilt.

PASTER
1—117″ 5 ply Downingtown paster

POPE REEL
Write us regarding your requirements.

PRESS ROLLS
2—Chilled iron, chrome plated 9″ x 72″.
1—Chilled iron, chrome plated 14″ x 72″.
1—Chilled iron, chrome plated 12″ x 100″.
1—Chilled iron, chrome plated 10″ x 74″.
8—sets (1 rubber, 1 chrome steel) 74″ face x 15″ dia., complete with bearings.

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—36″ Somat pulping machine.
Write us regarding your requirements.

PUMPS
2—Five stage Centrifugal Boiler Feed Pumps, 160 g.p.m., 1025 ft. head.
1—Morris-10,000 g.p.m. 25 ft. head (all bronze).
1—Shartle Circulating Pump.
Various sizes, Centrifugal and Plunger Pumps.

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Write us regarding your requirements.

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″—3 bowl Revolving Reel.
1—134″—2 drum.
1—72″ Dowingtown Reel, 2 bowl.
1—84″ 2 bowl (72″ diameter rolls).

REFINERS
1—12″ Wiener Refiner.
1—#2 Claflin refiner.

REGULATOR
1—Bird Consistency Regulator.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#1A Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS
1—#5 Bird Saveall.

SCREEN PLATES
Bird Rotary screen plates.
Write us regarding your requirements.

SHEETERS
1—36″ Beck Sheeter with layboy, electric eye, motor equipped. Excellent condition.
1—78″ Moore & White Co. Sheeter (Simplex), layboy and 6 roll backstand.
1—132″ Hamblet heavy duty duplex sheeter,-anti-friction bearings throughout, including layboy and backstand.

SHOWERS
Write us regarding your requirements.

SHREDDERS
1—16″ "Swift" Paper Shredder.
Write us regarding your requirements.

SLITTERS & WINDERS
1—32″ Cameron Type 9.
1—42″ Cameron Type 9.
3—42″ Cameron Type 6.
1—42″ Cameron Type 26-2A.
1—50″ Cameron Type 6.
1—62″ Cameron Type 6.
1—62″ Cameron Type 10-10.
1—82″ Cameron Type 10, rebuilt (like new), anti friction bearings, 36″ rewind.
1—157″ Cameron Type 18.
1—40″ Fales Slitter.
1—86″ Two Drum Moore & White 50″ diameter rewind.
1—120″ Moore & White 4 drum winder.
1—96″ 4 drum Moore & White winder.
1—84″ Waldron winder (50″ rewind)

SLITTING DEVICE
84″—Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new).

STOCK MAKER
1—Morden Stock Maker (with motor).

STOCK PUMPS
1—Union centrifugal stock pump, 4″ x 6″, all bronze, with totally enclosed motor.
1—8 x 18 Shartle Triplex.
1—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.

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Write us concerning your requirements.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face, SKF bearings.
1—Sandusky Suction Couch Roll 18″ diameter x 98″ face.
1—Sandusky Suction Couch Roll 108″ face x 24″ diameter, including spare shell.

SUCTION FELT ROLLS
1—Gilbert & Nash 122″ face.
1—Beloit Rubber Covered Suction Felt Roll 109″ face x 20½″ diameter.

SUCTION PRESS ROLL
1—Downingtown, rubber-covered 85″ face x 20″ diameter (complete with vacuum pumps).

SUPER CALENDER STACK
1—9 Roll 56″.

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face.
30—4″ dia. x 130″ face (will cut to size).

TANK
1—Solvent Recovery Tank, 21 ft. long x 7 ft. diameter.

THICKENERS
1—Pusey & Jones, 42″ x 146″ face cylinder mold, 18″ diameter couch roll. Complete with Iron end wood vat.
5—36″ x 100″, stainless steel vats.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder).

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Write us regarding your requirements.

TURBINE GENERATOR SET
1—150 kw General Electric.

VACUUM PUMPS
1—#6 Nash hytor.
1—L-4 Nash vacuum pump.
1—L-5 Nash vacuum pump.
1—L-6 Nash Vacuum Pump.
2—L-8 Nash Vacuum Pumps.
1—K-4, motor equipped.
3—#1 Nash Hytor vacuum pumps.
1—#7 Nash Hytor, complete with 75 HP synchronous motor.
1—#4 Nash Hytor vacuum pump.
2—Connersville, 14 x 20.

VATS
2—D. J. Murray Co. Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

WET MACHINE
1—72″ Wet Machine.

YANKEE DRYERS
1—84″ diameter x 56″ face.
1—140″ face x 12′ dia. anti friction bearings & stands.
1—60″ diameter x 89″ face, frames and bearings.

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurs, Treas.
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PAPER MILL EXPERIENCE. MILL LOCATED IN CHICAGO AREA. PENSION, GROUP INSURANCE AND EMPLOYEE BENEFIT PLANS. ADVISE AGE, EXPERIENCE AND SALARY EXPECTED. REPLY TO NATIONAL BISCUIT COMPANY, ADVERTISING DEPARTMENT, 425 PARK AVENUE, NEW YORK 22, NEW YORK.

O-7

A leading chemical manufacturer has an opening in his paper laboratory for a paper school graduate, or chemist with ChE or BS degree with paper mill experience. The position involves application of new and existing products to manufacture of paper and paperboard. Experience in coatings helpful, but not essential. Opportunity given to assist in supervision of laboratory located in Midwest. Send resume of education and experience, along with salary expected to: Director of Paper Laboratory, Post Office Box 5670, Chicago 80, Illinois. All replies kept confidential. O-14

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For broad packaging development program in new Research Department of integrated operation. Background in corrugated containers desirable but not essential. Salary and responsibility commensurate with experience. Mid South Location. Apply Box 57-254 care Paper Trade Journal.

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Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large expanding and progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience. Send resume to

Director of Personnel
West Virginia Pulp & Paper Co.
Luke, Maryland

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IF YOU ARE A TOUR BOSS OR AN EXPERIENCED MACHINE TENDER WITH ABILITY AND AMBITION TO BE A TOUR BOSS WE HAVE AN OPENING. PROGRESSIVE TWO MACHINE BOARD MILL IN EASTERN PENNSYLVANIA. MANUFACTURING SET-UP AND FOLDING BOX BOARDS AND SPECIALTIES. STEADY EMPLOYMENT. IF AVAILABLE, WRITE BOX 57-276 PAPER TRADE JOURNAL, GIVING EXPERIENCE AND AGE. O-14

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BOARD MILL SUPERINTENDENT

for an

EASTERN SEABOARD MILL

One Machine, Narrow Trim, Steady Runs, Lined Boards. State age, experience, and previous record of employment.

Reply Box 57-282 care Paper Trade Journal.

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CONVERTING SUPT. — For Tissue and Towel Converting operations. Must have mechanical and managerial qualifications, also ability to work on new product development. Apply to Box 57-281 care Paper Trade Journal. O-28

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AT PRESENT TECHNICAL DIRECTOR AaA-1 COMPANY DIVISION OPERATING IN—

Non-ferrous foil rolling, extrusion, laminating, coating, vacuum metal evaporation.

Metals, papers, boards, films, adhesives, and colors.

Electronics, containers, and structural.

Military and commercial.

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Wish to change; available for one or two days per week on permanent basis.

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Expert papermaker wishes to make change. Now employed. Experienced on fast machines, technical and converting papers — kraft — groundwood and free-book and bond. Able to revamp and maintain a mill for low cost production. Technically trained. Box 57-267, care Paper Trade Journal. O-14

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Mechanical and chemical graduate with 25 years experience in pulp and paper mill engineering, technical direction and management. Available now. Address Box 57-268 care Paper Trade Journal.

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AS CHIEF POWER ENGINEER or POWER PLANT SUPT.

Twenty-two years experience in Power Engineering including high-pressure plants. Now in charge of a plant with 9,000 KW generating cap. Have a very good technical education in engineering and have a first class engineer's license. Address Box 57-266 care Paper Trade Journal. O-7

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WINDERS

1—156" Cameron Winder, will now make 48" dia. Can rebuild for 60" or 72" diameter.

1—184" Cameron Winder complete with backstands, with water-cooled frictions. Will operate at 3000 F.P.M.

1—80" Board Machine, 2-drum slitter and winder, will make 50" diameter rolls.

1—164" Two-drum Slitter and Winder fully rebuilt by Beloit in 1954. Complete with backstands, rebuilt for 2500 F.P.M.

Osborne Paper Mill Equipment Corp.
Fulton, New York Tel. 2-4254

O-7

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IMMEDIATE DELIVERY

1—145" Holyoke—9 roll Super Calender Stack.

1—66" Holyoke—9 roll Super Calender Stack.

1—80" Pusey & Jones—11 roll Calender Stack.

1—30" x 160" Farrel-Birmingham Roll Grinder. Factory rebuilt in 1954 at a cost of $18,500.00. New drives and latest type of equipment.

27—48" x 110" Bagley & Sewall Dryers.

21—48" x 82" Pusey & Jones Dryers.

6—48" x 88" Bagley & Sewall After Dryers.

1—120" Pusey & Jones 2-Drum Winder. Anti Friction Bearings.

1—110" Pusey & Jones 2-Drum Winder. Anti Friction Bearings.

7—14 Plate Impco Flat Screens, Bronze Vats, latest type, direct motor drives, S.S. Plates.

1—Waxing Machine, complete with Vilter Refrigeration Equipment and Drives.

1—Hamblet Roller Bearing Cutter—30 roll backstand. Serial No. 2282, Model 28, Fully Equipped.

1—Hamblet Layboy, Serial No. 1140, Fully Equipped.

1—Continuous Feed Metal Edging Machine. (New)

1—Brightwood Box Machine, 6" Model Automatic Rotary Feed, End Shredder (60 per minute), Complete.

1—Hudson Sharpe Wax Paper Converter, Serial No. 1507, Fully Equipped, trim 72".

1—84" Kamyr Machine Complete, 75 Ton per day.

1—25" Dia. x 156" Suction Couch Roll.

2—22" Dia. x 156" Rubber Covered Press Rolls.

2—84" Bagley & Sewall Wet Machines.

1—No. 2 Jones Pulper, Anti Friction Bearings. Spare Worm.

1—Cowls Hydraslusher Model 10 SD.

1—90 H.P. Terry Turbine, Type G-4000/1000 RPM. For Paper Machine Drive. Complete.

1—74" x 32" Saveall, complete with rubber suction couch.

1—8' x 10' Oliver Vacuum Filter.

2—Impco Pulp Screens.

2—No. 3 Impco Knotter Screens—S.S. Plates.

3—100 KVA Wagner Transformers, 4600-460.

1—24" x 6' Lodge & Shipley Geared Head, Heavy Duty Machine Lathe, Taper Attachment, Hollow Spindle, Motorized.

1—16" Steptoe Shaper—Motorized.

1—8 & S No. 2 Surface Grinder—Motorized. Gear Reducers, P.I.V. Drives, Gearmotors, B.B. Pumps, Etc. 1000 Electric Motors from ¼ H.P. to 600 H.P. In Stock.

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.

We also have a large inventory of new and used flanged fittings at all types at very low prices.

Write—Wire—Phone For Your Needs

RUDERMAN MACHINERY EXCHANGE

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Entire Contents Thomas Phillips Company Paper Mill At Akron, Ohio

FOR SALE BY OWNER

Write or phone for complete prices. All equipment at plant as is where is

and subject to prior sale

SCREENS

#3A Bird, Copper Vat
#2A Bird, Copper Vat
Smythe 4-plate flat, with shaker

VATS

3—Downingtown Vats, C.I. Ends, cypress sides
3—42" x 86" cylinder moulds, a.f. bearings
3—16" Rubber couches
3—Sandusky Showers
1—Felt whipper and Sandusky shower
1—Suction box
1—Sandusky Suction Press

PRESSES

First and Second
2—Top, brass 15" x 84"
2—Bottom, rubber 15" x 84"
Horne Smooth press, pneu. controls (new 1956)

DRYERS

21—36" x 82" Downingtown, fr. bearings
1—Sandy Hill Breaker Stack w/in.-drive, pneu. controls (new 1957)
1—Stickle Tension Roll steam control system & controls (new 1957)
23—Stickle micro-orifice visible drains (new 1957)
1—Stickle Vacuum Pump (new 1957)

CALENDERS

1—5 roll Downingtown 84" face
1—7 roll (originally 8) 84" face
1—Set embossing rolls 9 lines to inch

REEL

1—2 drum upright

WINDER-SLITTER

1—Moore and White w/new (1956) electric drive

DRIVES

Mortise bevel gear corners
#7 ¾ Reeves w/75 HP motor

PIPING

Stainless steel recirculating system

PUMPS

1—Nash H7 vacuum 50 HP
1—Nash Hytor vacuum 10 HP
2—Shartle 8" x 6"
3—Shartle 12" x 10" white water suction 20 HP
2—Harmain centr. 6" x 6" 800 gpm 40' Hd.

STOCK CLEANING

2—Primary Bird Dirtecs (new 1957)
2—Sec. Bird Dirtecs (New 1957)
2—Nichols Vortraps

BEATERS

4—Downingtown Iron Tub 1200 lb., cement bottom, washers
1—Dilts 1000 lb.
1—Midwest 1600 lb., wedge type roll
1—Midwest 2500 lb., wedge type roll
1—Rotary Filter Screen
1—Rubber covered steel tank with PVC bleaching system, 1"

ROPE COOKERS

1—7000 lb. cap.
1—8000 lb. cap.

HOIST

1—Yale Electric and monorail system

BALER

Economy upstroke Style 172F5 (new 1956)
1—Miami No. 1 w/af bearings 150 HP motor and reducer
1—Miami No. 1 w/f bearings 150 HP motor and reducer
1—Clarkson chemical feeder

SAVE-ALL

1—Bird with couch and shower

MISC.

1—Cameron Rewinder 10-5A, 54", 36" dia. roll
1—Air compressor, 15 HP DeVilbiss
25—Broke boxes each with 4 b.b. casters
1—Bird Consistency Regulator, Stnls, w/ controls, cap. 2000# hr. (new 1956)
1—2000# Dial springless floor scale
1—Budget 1 ton elect. hoist
2—Hand roll trucks
2—4 wheel trucks
1—Rope Duster 15 HP
1—Budgit 2 ton chain block
1—Horizontal caustic soda tank 6' x 8' steel
1—Battery Lewis Shepard Jackstacker 1500# cap. w/generator
1—Weld-built Elevator 1000# cap. 10' lift
1—Lewis Shepard 2000# hyd. pallet truck
1—Yale and Towne power winch

LABORATORY

1—Schopper tensile tester w/strip cutter (new 1956)
1—Perkins Mullen Tester
1—Elmendorf Tear Tester
2—Thwing-Albert Basis Wgt scales
2—Gurley densometers (new 1957)
1—Automatic micrometer (new 1957)
1—Macbeth Ph meter
1—Hart moisture meter
1—24" paper cutter
1—Pelouze postal scale (5 lb. cap.)
1—Absorption tester
1—Brightness Tester, Photovolt
1—Freeness Tester, Canadian Standard

PUMPS, STOCK, HIGH CONSISTENCY

1—Shartle Duplex Plunger
1—Shartle Single Plunger
1—Shartle, Centrif. 2800 gpm at 20' hd.

PUMPS, WATER

1—Allis-Chalmers high pressure 2 stage 25 hp 150 gpm 3350 rpm
1—Louis Allis, 15 hp 100 gpm 3500 rpm
1—2" Single stage centrif. 5 hp
Also several low head high volume pumps
1 ea. Boiler feed pumps, steam and electric

MACHINE SHOP

1—Craftsman Double End Grinder, floor pedestal type, 1/3 HP motor 115 V., 3450 RPM
1—Craftsman 6" Jointer, 1 HP motor, 115 V., 3450 RPM
1—Dunlap Utility Hack Saw, ½ HP 110 V., motor, 1725 RPM
1—Pamco Arbor Press #2
1—Craftsman Quick Change Gear Lathe, 52" bed, 1/3 HP, 115 V., 60 cycle, 1750 RPM motor
1—Atlas Bench Shaper with vise, ½ Hp, 110/220 V. 1 phase, 60 cycle, 1750 RPM motor
1—Jig Saw, floor pedestal type, 110 V. A.D. Motor
1—Prentice Bros. 18" Drill Press, 2 HP Link-weld motor 440 volt, 3 phase, 60 cycle, 720 RPM
1—Linewelder DC, 250, Electric Welding, 220 Volt, 3 phase 60 cycle, 3600 RPM motor
1—Alamite Volume Pump, model 6536
2—Acetylene Welding sets and fittings
3—Large Shop Vises
2—Large Anvils
2—Iron Hinged Pipe Vises, 1 large, 1 small
1—Tri-stand Pipe Vise
1—6" Swivel Vise
1—21" Drill Press with Vise, 2 HP 220/440 V. 60 cycle motor
1—Williams Pipe Cutter and Fittings. Dies 3" to 8", V-belt drive, 2 HP 440 V., 3 ph., 60 cycle, 1130 RPM motor
1—Atlas Rip Saw, pp. 8" dia. blade with side extensions, 1 HP 220/440 V., 60 cycle, 3450 RPM motor
1—Cincinnati Grinder, double end, floor pedestal type 1 HP 440 volt, 3 phase, 60 cycle, 1750 RPM motor

BOILER

Babcock & Wilcox 440 hp Sterling Type H (installed 1947) 250 lb.
United Ash Blower
Combustion Engineering Stoker, Steam

COATING ROOM

1—Waldron Brush Grounder Machine 37" max. width
1—Cameron Winder Machine 46" w/backstand
1—Waldron Polishing Drum w/brushes, 40"
1—B. F. Sturtevant Co. Steam Dryer with G.E. 30 HP 440 volt, 860 RPM motor
1—Exhaust fan with 3 HP Crocker-Wheeler 440 volt, 60 cycle 1750 RPM motor
1—Budgit 1 ton Electric Hoist
1—Yale ½ ton spur-geared Chain Block
1—Lewis-Shepard 4000# Jack Lift Truck, "Master Line," No. 117292, HPI-40
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1—Cooking Tank, steam jacketed
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1—Downingtown 24" dia. x 134" face bronze plain extractor roll, complete with 18" dia. RC couch rolls. All rolls are f.f. brg.

PRIMARY PRESS SECTION
4 Sets of primary press rolls, consisting of 4—12" dia., 4—14" dia., and 4—16" dia. x 128" face. Bottom rolls are cast iron with bronze jackets. Top rolls are R.C. These rolls are complete with bearings and Marshall drive.

MAIN PRESS SECTION
3 Sets of main presses, consisting of 2 stonite and 1 bronze jacketed 22" dia. x 129" face top press rolls in 3 R.C. 22" dia. x 128" face bottom press rolls. These press sections are complete with bearings, raising devices, frames, levers, 2 press roll doctors complete with oscillating drives. They are offered complete with 2 Falk right angle reduction gear drives rated at 22 H.P. each, ratio 9.09 to 1, complete with friction clutch, cone pulleys and belt guide.

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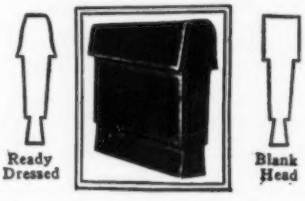

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BUSINESS STAFF

Arthur E. Gordon, Business Mgr.
Francis J. Gordon
15 West 47th Street, New York 36, N. Y. Plaza 7-2370
H. K. Vinton
CHICAGO 3, ILL.: Room 1020, 79 West Monroe St. CEntral 6-2784

Frederick B. Grosse Production Mgr.
Alrick Man
15 West 47th Street, New York 36, N. Y. Plaza 7-2370
H. L. Poulton
PITTSBURGH, 11, PA.: 610 Pennridge Road. Hemlock 1-1571

McDonald-Thompson Company
SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-0647
LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391
DENVER, 2, COLO.: 222 Colorado Nat'l Bank Bldg. KEystone 4-4669
SEATTLE, 4, WASH.: National Bldg.—ELliott 3767
HOUSTON, 6, TEXAS: Room 214, 3217 Montrose Blvd. JAckson 9-6 711
TULSA 4, OKLAHOMA: 2010 So. Utica
MIAMI, FLORIDA: Hal Moore, Printup & Assoc., 1006 Langford Bldg. Phone:—FRanklin 9-2668. Georg J. Linder: Frankfurt am Main, Wittlesbacher Alle 60, Germany — Telefon 46372

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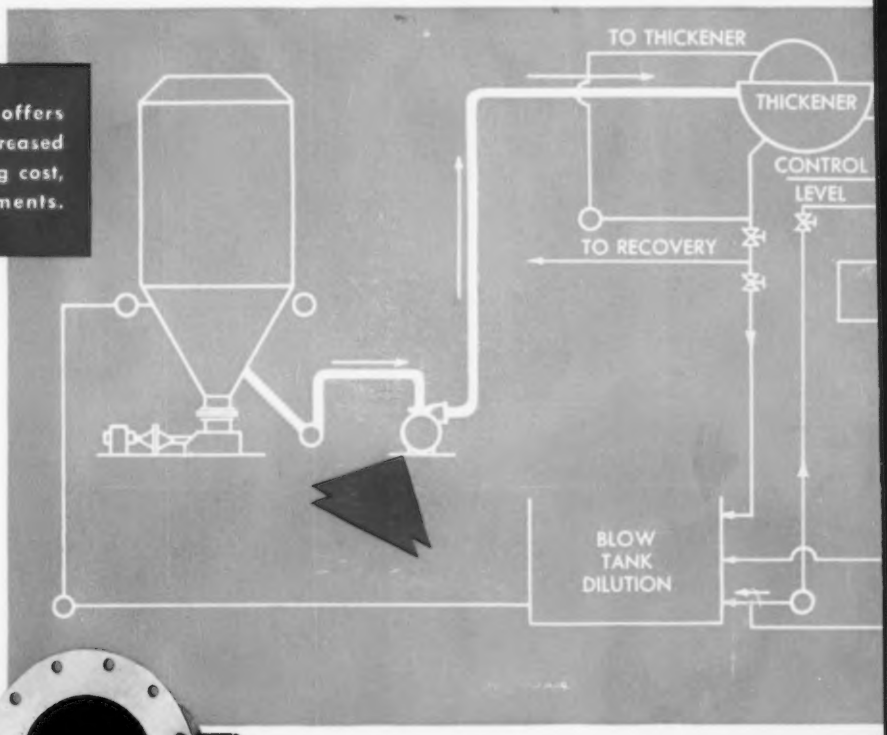

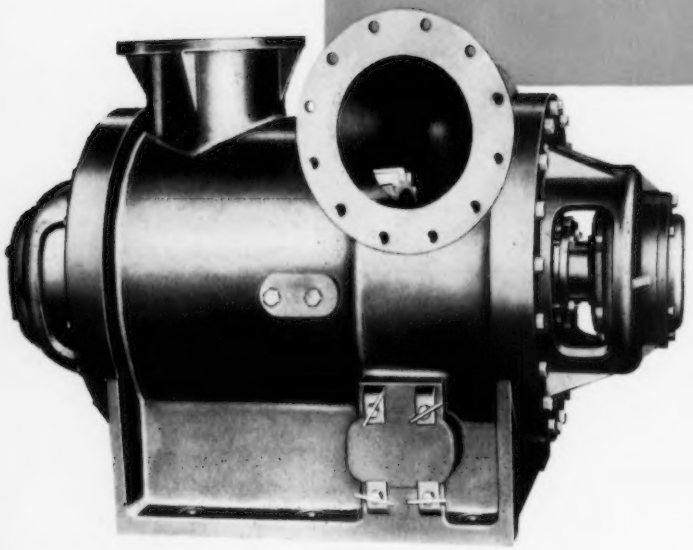

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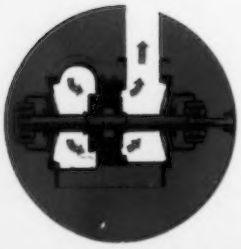

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